

# THE GENERA ALOE AND MESEMBRYANTHEMUM

AS REPRESENTED IN THUNBERG'S HERBARIUM.

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## ALOE.

THE Kew Herbarium having acquired, through the courtesy of Professor H. O. Juel, Director of Upsala Botanic Garden, the loan of the type specimens of the genera *Aloe* and *Mesembryanthemum* collected in South Africa by Thunberg, I have had the opportunity to carefully examine and compare them with the material at Kew, and have thought it would be useful to future workers upon these genera to give an account of the specimens and my identifications of them.

During my long career at Kew I have on several previous occasions had the privilege of being able to examine Thunberg's types of various orders and genera, and in all cases have made notes of my comparisons upon the sheets in the Kew Herbarium. In all the genera that I have previously examined Thunberg's material has usually been quite satisfactory and often excellent, but in the genus *Aloe* this is unfortunately not the case, for the specimens of most of the species consist of detached leaves and flower-stems, and in some instances the leaves and flowers of what are supposed to represent one species belong to two different species or even different genera. This is so unlike the usual excellence of Thunberg's specimens that it must be attributed to the succulent nature and often large size of the plants and the difficulty Thunberg must have had in properly making good, dried specimens of them while travelling as he did at that date. It seems evident that his specimens of detached leaves and flowers must have become mixed in the press, and that he sometimes forgot which leaves belonged to the flowers; hence, the mixture.

As I have very rarely found a locality written upon the sheet containing the specimen, Thunberg must have had some separate notes connecting the localities, as given in his "Flora Capensis," ed. Schultes, with the specimens.

From Professor Juel's account of Thunberg's Herbarium, it would appear that Thunberg brought his collection, or some part of it, to Europe mounted upon small sheets of thin paper, and remounted them on larger sheets of thicker paper after his return to Sweden. In doing this it is quite possible that some of the mixtures of species may have been made.

In the account of them which follows, the species have been arranged alphabetically under the names that Thunberg used in his "Flora Capensis," ed. Schultes, for convenience of reference; and for the sake of brevity I have quoted this work throughout as Thunb., "Fl. Cap."

## ALOE, LINN.

**A. arachnoides**, Thunb., "Diss. Aloe," p. 7 (1785), and "Fl. Cap.," p. 311.

The specimen consists of three tufts of leaves and three racemes of flowers; all of the latter, I believe, are detached, but have been inserted among the leaves, and only that of the middle specimen can belong, as the other two flower-stems certainly belong, to a

different plant. The leaves belong to *Haworthia arachnoidea*, Duval, "Pl. Succ. Hort. Alenconia," p. 7 (1809); *H. arachnoides*, Haw., "Synop.," p. 96 (1812); *Aloe arachnoidea*, Miller, "Gard. Dict.," ed. 8, No. 17 (1768), as generally understood.

The locality given by Thunberg is Karroo near Zwartkops Zoutpan, in Uitenhage Division.

**A. dichotoma**, Thunb., "Fl. Cap.," p. 309.

The type specimen of this species consists of two short, longitudinal sections of the stem, one showing the very smooth bark and the other the interior fibre, and one leaf. It is the plant understood by this name, but the earliest publication of it is **Aloe dichotoma**, Masson in "Phil. Trans. Roy. Soc.," Lond. (1776), Vol. LXVI, Part I, p. 310, where the following description is given: "We found a new species of Aloe here (Masson and Thunberg were then, on 2nd November, 1774, ascending the Bokkeveld Mountains), called by the Dutch *Koker Boom*, of which the Hottentots make quivers to hold their arrows; it being of a soft, fibrous consistence, which they can easily cut out, leaving only the bark, which is hard and durable. These trees were about 12 feet high, with a straight, smooth trunk, about 10 inches or a foot (in) diameter and 5 or 6 feet in length, which divided into two branches, and those were again sub-divided into two more branches, which terminated in a bunch of thick, succulent leaves surrounding the stem, spear-shaped, entire, without spines, and hanging down like the leaves of *Dracaena draco*. We did not see it in flower, but by the above characters took it for a new species, and called it *Aloe dichotoma*." This name is usually quoted as having been given by Linnaeus fil., "Suppl.," p. 206, but that work was not published until 1781, five years later than the publication of Masson's description, which is also a far better one than that of the younger Linné.

**A. disticha**, Thunb., "Diss. Aloe.," p. 7 (1785), and "Fl. Cap.," p. 311, not of Linnaeus.

There are two sheets bearing this name, numbered 1 and 2. Both contain very good specimens of a new species of *Gasteria*, nearly allied to *G. verrucosa*, Haw., but differing from that species by the leaves being little more than half as broad at the base, with more parallel sides and more acute and somewhat spine-pointed at the apex, and with smaller and more prominent white tubercles than those of *G. verrucosa*. The following is a description of it:—

**Gasteria Thunbergii**, N.E.Br.

*Leaves* strictly two-ranked, 3-7 inches long, 6-8 lines broad just above the sheath, and of nearly equal width to about 6-9 lines below the tip, where they taper sharply into a fine spine-like point. The surface on both sides and the margins are very rough from being thickly covered with small, white, very prominent tubercles. The *flower-stems* are detached, but probably belong to the leaves; they are about 18 inches long, but were evidently longer, and are unbranched, 2½ lines thick. *Flowers* 7-9 lines apart. *Bracts* 3-4 lines long, reflexed, deltoid, acuminate, membranous. *Pedicels* 6-8 lines long, reflexed. *Perianth* (above its articulation with the pedicel) 11 lines long, curved, inflated at the lower part.

Thunberg does not give the locality of this species.

**A. humilis**, Thunb., "Diss. Aloe.," p. 6 (1785), and "Fl. Cap.," p. 311.

This is *A. humilis*, Miller, "Abr. Gard. Dict.," ed. 6, No. 10 (1771).

The specimen consists of a small tuft of leaves and two good flowering stems. The sheet is labelled on the back as being from a plant cultivated in the Botanic Garden at Upsala.

**A. lingua**, Thunb., "Diss. Aloe.," p. 8 (1785), and "Fl. Cap.," p. 312.

This is *A. plicatilis*, Miller, "Gard. Dict.," ed. 8, No. 7 (1768); *A. linguaeformis*, Linn. f., "Suppl.," p. 206 (1781), not of Miller.

The specimen consists of two leaves and two flowering stems. It was collected on mountains at Roode Zand, near Tulbagh Waterfall.

*A. lingua*, Thunb., is wrongly quoted by Baker in the "Fl. Cap.," Vol. VI, p. 291 (although omitted from the index), as being partly *Gasteria disticha*, whilst *A. linguaeformis*, Linn. f., is not quoted at all, no attention having been paid to Haworth's correct statement in "Phil. Mag.," Nov. (1827), Vol. II, p. 353, that Thunberg's plant was *Rhipidodendrum distichum*, Willd. in "Ges. Naturf. Fr. Berl. Mag.," Vol. V, p. 165 (1811), which is a synonym of *Aloe plicatilis*.

**A. maculata**, Thunb., "Diss. Aloe," p. 8 (1785), and "Fl. Cap.," p. 311.

There are two sheets of this marked *a* and *β*.

Sheet *a* contains portions of two leaves and a raceme of what I believe to be **Gasteria pulchra**, Haw., "Synop.," p. 86 (1812).

Sheet *β* (which also has the name "*obliqua*, Haw.," written upon it in pencil) contains the apical half of some large and broad-leaved species of *Gasteria*, totally different from *G. pulchra*, which I cannot identify, and two inflorescences of some species of *Aloe* that are indeterminable.

Thunberg states that *A. maculata* grows on the Outeniqua Mountains, and often cultivated at Capetown, so that his specimens may have been partly obtained from both places.

**A. perfoliata**, Thunb., "Diss. Aloe," p. 5 (1785), and "Fl. Cap.," p. 310.

There are three sheets bearing this name, marked *a*, *β*, and *γ*.

Sheet *a* contains one leaf about 7 inches long and  $2\frac{3}{4}$  inches broad, a tuft of four small leaves about  $2\frac{1}{2}$  inches long and 1 inch broad, and two single flowers. These fragments may really belong to three different species; it is not possible to name them with certainty.

Sheet *β* contains part of a leaf and two inflorescences, which I believe to belong to *A. latifolia*, Haw., "Synop.," p. 82 (1812).

Sheet *γ* contains part of a leaf and a flower-spike of *A. vera*, Linn., "Sp. Pl.," p. 320.

The locality given by Thunberg for *A. perfoliata* is the Karroo beyond Swellendam, on the sides of mountains. Sheet *γ*, however, is labelled on the back as having been sent from the West Indies by Forsström, where *A. vera* has been introduced from the Canaries.

**A. picta**, Thunb., "Diss. Aloe," p. 6 (1785), and "Fl. Cap.," p. 310.

This species is not represented by any specimen so named in Thunberg's Herbarium. He founded it upon *A. perfoliata*, vars. *θ*, *λ*, *μ*, *ν*, Linn., "Sp. Pl.," ed. 1, p. 320.

**A. pumala**, Thunb., "Diss. Aloe," p. 7 (1785), and "Fl. Cap.," p. 311.

There are two sheets so named, marked *a* and *β*.

Sheet *a* contains a tuft of leaves of *Haworthia fasciata*, Haw., "Suppl.," p. 57 (1819), on the left-hand side, and on the right-hand side a tuft of leaves of *Haworthia granata*, Haw., "Suppl.," p. 57 (1819). Each of these tufts has a flower-stem placed among them, but detached, which may or may not belong to the leaves; I am rather doubtful if they are properly placed.

Sheet *β* contains two leaves and a paniculately branched flowering-stem of what I believe to be *Haworthia margaritifera*, Haw., "Suppl.," p. 55 (1819), but the material is too poor to make the identification certain.

No locality is given for this species, but sheet *a* is labelled on the back as being from plants cultivated in Upsala Botanic Garden.

*N.B.*—*Aloe pumila*, Linn., "Sp. Pl.," ed. 1, p. 322, is likewise a mixture of two or three species of *Haworthia* with white tubercles, so that it is probable that at that date several species of this type were considered to be forms of one species.

**A. retusa**, Thunb., "Diss. Aloe," p. 10 (1785), and "Fl. Cap.," p. 311.

The specimen of this consists of part of a plant with two leaves and a flower-stem attached, five detached leaves, and a detached inflorescence, which all belong to **Haworthia retusa**, Duval, "Pl. Succ. Hort. Alenconio," p. 7 (1809), and Haw., "Synop.," p. 95 (1812); *Aloe retusa*, Linn., "Sp. Pl.," ed. 1, p. 322. No locality is mentioned by Thunberg for this species, but the specimen is labelled on the back of the sheet as being from a plant cultivated in Upsala Botanic Garden.

**A. sinuata**, Thunb., "Diss. Aloe," p. 6 (1785), and "Fl. Cap.," p. 311.

This name was founded by Thunberg upon the plant enumerated by Linnaeus in his "Species Plantarum," ed. 1, p. 320, and ed. 2, p. 458, as *A. perfoliata*, var.  $\xi$ , which is based upon "*Aloe succotrina angustifolia spinosa, flore purpurea*," of Commelin, "Horti Medici Rariorum Plantarum," Vol. I, p. 94, t. 48 (1697). This plant of Commelin's is *Aloe succotrina*, Weston, "Universal Botanist and Nurseryman," Vol. I, p. 5 (1770), a book that seems to have been overlooked by all modern authors, yet it contains names that antedate some that have been credited to Lamark, whose first volume of his "Encyclopédie" was not published until 1783, or thirteen years later than Weston's book.

No specimen exists in Thunberg's Herbarium bearing the name *A. sinuata*, but there is a sheet bearing the name *A. succotrina* in Thunberg's handwriting, which Professor Juel, in his "Plantae Thunbergianae," p. 119, seems to have considered to represent *A. sinuata*, Thunb. This sheet, however, contains (a) part of a leaf of *Aloe fruticosa*, Lam., (b) part of a leaf of *Aloe spicata*, Thunb., and (c) part of a raceme of flowers of some species of *Aloe* that is quite indeterminable, but most certainly does not belong to either species represented by leaves upon that sheet.

So that if *A. sinuata*, Thunb., is considered to be founded upon *A. perfoliata*, var.  $\xi$  of Linnaeus, it must be placed as a synonym of *A. succotrina*, Weston. But if it is held to be founded upon the sheet bearing the name *A. succotrina* in Thunberg's Herbarium, then the name *A. sinuata* must disappear altogether.

In the synonymy that Thunberg gives under *A. sinuata*, he quotes "*Aloe barbadensis mitior, laete virens et splendens*," Dill., "Hort. Elth.," p. 23, t. 19, f. 24." The figure should be 21, not 24. This figure represents one of the American species of *Agave*.

Although *Aloe succotrina* is not mentioned by Thunberg in his "Prodromus" or "Floras," yet in his "Travels," English translation, ed. 3, Vol. I, p. 213, he mentions, under the date of 14th December, 1772, when at a farm near Slange River, in Oudtshoorn Division, that "Here we saw quickset hedges of *Aloe succotrina*." What is this plant? Can it be a species distinct from *Aloe fruticosa*?

**A. spicata**, Linn. f., "Suppl.," p. 205 (1781); Thunb., "Fl. Cap.," p. 309.

Thunberg's specimen of this is the type of this species, and consists of portions of two leaves and six detached flowers. The leaves are respectively  $10\frac{3}{4}$  and  $13\frac{3}{4}$  inches long, and 14 and 16 lines wide at their basal ends, gradually tapering thence into a long and slender subulate point, which at 3 inches below the acute or bluntish tip is only 2 lines broad. The part of the leaf on the sheet named *A. succotrina* above-mentioned (under *A. sinuata*) is just 1 foot long and 14 lines broad at its basal end, and has just the same long, subulate apex. The teeth on the margins are 6-8 lines apart and very small, being not more than half a line long; the apical spine is also small. The margin between the spines is straight or very faintly concave. The flower-stem and pedicels are absent, but the flowers may have been sessile. One flower has what appears to be a bract attached to it, which is 6 lines long and 5 lines broad, and is broadly elliptic, obtuse, 3-nerved. The perianth is campulate in shape, 7 lines long and 5 lines in diameter as pressed, but is probably of nearly the same dimensions when alive. The segments are nearly 3 lines broad, ovate, oblong, obtuse, 3-nerved; they all appear to be free to the base, and are not recurved at the apex. According to Thunberg they are white, with three green veins.

The stamens are exerted 3-4 lines beyond the tips of the perianth-segments, with stout, purple filaments half a line broad, but, according to Thunberg, the filaments are yellowish at the upper part and white at the base. He states that the flower is filled with a purple fluid, which, in the process of drying the specimen, may have stained the filaments, especially as I note that some of the perianth-segments are also tinted with purple. The style protrudes 3-4 lines beyond the stamens.

Thunberg states that this very distinct and hitherto unknown plant grows "in the interior regions, flowering in August"; and that it has a thick stem 3-4 feet high, bearing a crown of spreading leaves 2 feet long, and a very dense spike, a foot long, of crowded horizontally spreading flowers.

In the "Gardeners' Chronicle" (1921), Vol. LXX, p. 6, I gave an account of the history of *Aloe spiricata* so far as known to me at the time, in which I detailed how I had vainly tried to get a clue from his travels to the locality where Thunberg found this plant, which still awaits rediscovery. There is nothing at all like it in the Kew Herbarium. I am now inclined to think that Thunberg may have seen the plant in cultivation in some garden at or near Capetown.

**A. spiralis**, Thunb., "Diss. Aloe," p. 9 (1785).

The sheet of this species in Thunberg's Herbarium contains a tuft of leaves of what I believe to be *Apicra spiralis*, Baker in "Jour. Linn. Soc.," Vol. XVIII, p. 217 (1880), and a detached inflorescence of some species of *Gasteria*, which is quite indeterminable.

No locality is mentioned by Thunberg for this species, and the specimen is from a plant cultivated in the Botanic Garden at Upsala.

I do not know if *Apicra spiralis*, Baker, is identical with *Apicra spiralis*, Willd., in "Ges. Naturf. Fr. Berl. Mag.," Vol. V, p. 273 (1811); it is a point that requires investigating.

**A. variegata**, Thunb., "Diss. Aloe," p. 9 (1785), and "Fl. Cap.," p. 312.

This is *A. variegata*, Linn., "Sp. Pl.," ed. 1, p. 327.

Thunberg's specimen consists of two leaves, with the variegation upon them well preserved, and a single flower. Thunberg does not mention a locality for it, and no information is given on the back of the sheet.

**A. viscosa**, Thunb., "Diss. Aloe," p. 9 (1785), and "Fl. Cap.," p. 312.

Thunberg's sheet of this species contains three flowering specimens. The central specimen, which I have marked (A) on the sheet, is larger than the others, and is *Haworthia viscosa*, Haw., "Synop.," p. 90 (1812). The lateral specimens, marked (B), may belong to a variety of *Haworthia viscosa*, Haw., or are possibly a distinct species allied to it. I have not seen any plant alive that is quite like them, so that living plants are required for their proper identification.

From the above account it will be seen that Thunberg's collection of the genus *Aloe* is rather a poor one in comparison with other genera in his Herbarium, as it contains little of interest except the type specimens of *Aloe spiricata*, *A. dichotoma*, and the new species of *Gasteria* described above.

#### MESEMBRYANTHEMUM.

Thunberg's collection of this genus is a very interesting one and consists of 109 sheets of specimens, many of which are excellent, although often small, some are scrappy, and, as in the genus *Aloe*, in some instances there is a mixture of species either upon the same sheet or upon different sheets bearing the same name.

When Sonder was preparing his monograph of this genus for the "Flora Capensis," he had Thunberg's specimens to work with, but, upon examining them, I find that he has dealt with them in a most imperfect and unsatisfactory manner. In some cases he has wrongly identified Thunberg's plant with specimens collected by Zeyher in a totally

different region, and described from Zeyher's plant, so that occasionally Thunberg's species is not described in the "Flora Capensis" at all. Added to this, Sonder has accepted the nomenclature of Salm Dyck's fine work on this genus as unimpeachable, whereas it is often entirely wrong, and therefore as the original descriptions of Thunberg and of Haworth are often entirely ignored and those of Salm Dyck, belonging to quite a different plant, substituted, much confusion of nomenclature has been made and the descriptions in the "Flora Capensis" are often quite untrustworthy. And as these errors have not been corrected by Berger in his monograph of the genus, since that work was chiefly compiled from the works of Salm Dyck and Sonder, there is really needed at the present time a carefully worked-out monograph of this very remarkable and highly interesting group of plants. This, as I have already stated in the "Journal of the Linnean Society of Botany," Vol. XLV, pp. 54-55, can only be properly and fully accomplished by a comparison with and study of the unique collection of original drawings of a large number of Haworth's types preserved at Kew.

In the process of comparison and identification of Thunberg's types with specimens in the Kew Herbarium, where Thunberg has mixed two or more species under one name, it has become necessary to take as being the plant he intended to bear the name that specimen which most accurately agrees with his description. As an example of this kind, *M. articulatum*, Thunb., may be cited. This name, as represented by his specimens, includes three distinct species, all very similar in general appearance, and upon a superficial examination they might easily be supposed to be one species, so that his description will apply fairly well to all of them, with the exception of the words "punctate-scabrid" as applied to the stem and calyx. As these words only apply to one of the specimens, neither of the others having this character, that particular specimen must be accepted as the type of *M. articulatum*, Thunb.

In the account of Thunberg's specimens which follows, the names are arranged in alphabetical order as they appear upon his sheets; and to the headline I have only given the reference to the well-known edition by Schultes of Thunberg's "Flora Capensis," published in 1823, other references being given under the determination of the specimens, except in those cases where Linnaeus or Linnaeus fil. is the author, as these, of course, take precedence over the names of Thunberg, Aiton, or Haworth. Thunberg gives no authority for the name on the sheets.

For the localities mentioned by Thunberg, I have used the modern form of spelling. Many of his more interesting species were collected in the Van Rhynsdorp and Calvinia Divisions, in the Karroo between the Olifants River and the 'Bokkeveld Mountains, and on or near Hantam Mountains.

The following is an explanatory list of the abbreviations used for the books quoted:—

Ait., "Hort. Kew".....	W. Aiton, "Hortus Kewensis," ed. 1, Vol. II (1789)
Berger, "Mesemb.".....	A. Berger, "Mesembryanthemum and Portulacaceae" (1908).
"Bot. Mag.".....	"Botanical Magazine."
D. C., "Plant Grass".....	A. P. de Candolle, "Histoire des Plantes Grasses" (1799-1829).
Eckl. & Zeyh., "Enum.".....	C. F. Ecklon & K. Zeyher, "Enumeratio Plantarum Africae Australis Extratropicae" (1834-37).
Haw., "Misc.".....	A. H. Haworth, "Miscellanea Naturalia" (1803).
Haw., "Obs.".....	A. H. Haworth, "Observations on the genus Mesembryanthemum." Part II (1795).
	<i>N.B.</i> —Part I was published in 1794, but does not contain any descriptions of species, only introductory matter.
Haw., "Rev.".....	A. H. Haworth, "Revisiones Plantarum Succulentarum" (1821).
Haw., "Suppl.".....	A. H. Haworth, "Supplementarum Plantarum Succulentarum" (1819).
Haw., "Synop.".....	A. H. Haworth, "Synopsis Plantarum Succulentarum" (1812).

- Houtt., "Handl."..... M. Houttuyn, "Handleiding tot de Plant- en Kruidkunde," Vol. IX (1778).
- Houtt., "Nat. Hist."..... M. Houttuyn, "Natuurlyke Historie of uitvoerige Beschryving der Dieren, Planten en Mineraalen," Deel II (1773-83).
- Jacq., "Hort. Schoenbr."..... N. J. Jacquin, "Plantarum rariorum Horti Caesari Schoenbrunnensis" (1797-1804).
- Jacq., "Hort. Vind."..... N. J. Jacquin, "Hortus Botanicus Vindobonensis" (1770-76).
- Lam., "Encyc."..... Chevalier Lamarck, "Encyclopédie Methodique," Vol. I-IV (1783-97).
- Linn., "Sp. Pl."..... C. Linnaeus, "Species Plantarum," ed. 1 (1753).
- Linn. f., "Suppl."..... C. von Linne, "Supplementarum Plantarum Systematis Vegetabilium (editionis decimae tertiae), Generum Plantarum (editionis sextae), et Specierum Plantarum (editionis secundae)" (1781).
- "Nov. Act. Acad. Leop.-Car. Ephem."..... Nova Acta Physico-Medica Academiae Caesareae Leopoldino-Carolinae Naturae Curiosorum exhibitia Ephemerides," Vol. VIII, Appendix (1791).
- Salm Dyck, "Mesemb."..... J. Salm-Reifferscheid-Dyck, "Monographia generum Aloes et Mesembryanthemi" (1836-63).
- Sond., "Fl. Cap."..... C. W. Sonder in Harvey & Sonder, "Flora Capensis," Vol. II (1861-62).
- Thunb., "Fl. Cap."..... C. P. Thunberg, "Flora Capensis," ed. Schultes (1823).
- Thunb., "Mus. Nat. Acad. Upsal."..... C. P. Thunberg, "Museum Naturalium Academiae Upsaliensis," Auctum, Part II (1827).
- Thunb., "Prod."..... C. P. Thunberg, "Prodromus Plantarum Capensium," Part II (1800).
- Willd., "Enum. Hort. Berol."..... C. L. Willdenow, "Enumeratio Plantarum Horti Regii Botanici Berolinensis" (1809); Supplementum (1813).
- Willd., "Hort. Berol."..... C. L. Willdenow, "Hortus Berolinensis" (1803-16).
- Willd., "Sp. Pl."..... C. L. Willdenow, "Species Plantarum," Vol. II (1799).

*N.B.*—Twenty-one species of *Mesembryanthemum* are described in this rare book.

### MESEMBRYANTHEMUM, L.

**M. acinaciforme**, Thunb., "Fl. Cap.," p. 422.

This name appears in both Thunberg's "Prodromus" and his "Flora," but no specimen exists in his Herbarium representing that name as used by him. There is, however, a specimen named "*M. forficatum*" by Thunberg, which is the true *M. acinaciforme*, Linn., and that name is also written upon the sheet as "*acinaciforme*, Mus."

**M. albidum**, Thunb., "Fl. Cap.," p. 423.

The specimen consists of two well-preserved flowering branches of *M. albidum*, L. The locality of this species is not mentioned.

**M. angulatum**, Thunb., "Fl. Cap.," p. 426.

There are three sheets of this, marked  $\alpha$ ,  $\beta$ , and  $\gamma$ . They all belong to the same species, viz. :—

*M. Aitonis*, Jacq., "Hort. Vind.," Vol. III, p. 8, t. 7 (1776).

**M. angulatum**, Thunb., "Prodr.," p. 91 (1800).

*M. crystallophanes*, Eckl. & Zeyher, "Enum. Pl. Afr. Austr.," p. 322 (1836), and Salm Dyck, "Mesemb.," § 60, fig. 2.

Thunberg collected this near the Sundays River in Uitenhage Division, and his specimens are identical with those of MacOwan, "Herb. Austr. Afr.," (1873) from near Grahamstown. It is somewhat remarkable that this very distinct plant has not previously been identified with Jacquin's excellent figure.

Thunberg describes the branches as opposite, and they are so on the lower part of the specimen on sheet *a*, but on the upper part of that specimen, and on that on sheet *β*, they are alternate, just as they are on MacOwan (1873).

Sonder in "Fl. Cap.," Vol. II, p. 454, quotes the specimen on sheet *γ* as being "*M. angulatum*, var. *gracile*," but it is merely a small lateral branch 2 inches long, broken from a larger specimen, and very possibly from one of those on sheet *a* or *β*. The Bethelsdorp specimen which Sonder also quotes for his variety *gracile*, and from which he doubtless described, is probably a different plant. Jacquin raised *M. Aitonis* from seeds sent to him by Aiton, so that in all probability they were collected and sent to Aiton by Masson, who accompanied Thunberg on his journeys.

**M. apetalum**, Thunb., "Fl. Cap.," p. 417.

This is represented in Thunberg's Herbarium by a scrap about 3 inches long, being evidently a short branch from an annual, but it is undoubtedly:—

*M. apetalum*, Linn. f., "Suppl.," p. 258 (1781); *M. copticum*, Jacq., "Hort. Vind.," Vol. III, p. 7, t. 6 (1776), not of Linnaeus.

*M. apetalum* was described from a plant cultivated in Upsala Botanic Garden, doubtless raised from seeds supplied by Thunberg. As no specimen exists in the Herbarium of the younger Linné, that in Thunberg's Herbarium must be accepted as the type of the species. It quite agrees with the description of Linnaeus fil., but I cannot match it with any specimen at Kew. It and *M. papulosum*, Linn. fil., are evidently allied species, and require to be searched for and made better known. To this end I here give a translation of the description of *M. apetalum*, Linn. fil., with details concerning Thunberg's specimen included.

The plant is an annual. Stems or branches 1-2 inches long, prostrate, terete, reddish, covered with glittering papillae, as is the whole plant. The branch of Thunberg's specimen including leaves, is 3 inches long and  $\frac{3}{4}$  line thick, and glabrous; the papillae have all shrunk and disappeared from the whole of the specimen except on one pedicel, where they are very evident and rather large, but, under a strong lens, in one or two places evidence that the leaves were also papillate can just be traced. Leaves opposite, about  $1\frac{1}{2}$ -2 inches long and 1-2 lines broad, linear, or, according to Linnaeus fil., slightly lanceolate, obtuse, succulent, channelled above, convex and somewhat roughly papillate beneath, glabrous. Pedicels  $\frac{1}{2}$ -1 inch long, 1-flowered. As pressed, the flower has the calyx-lobes and petals infolded upon the top of the ovary, and is about  $3\frac{1}{2}$ -4 lines in diameter. Calyx-lobes unequal, with subulate-cylindric tips. Petals 21, distant, very short, setaceous, white, resembling filaments without anthers, incumbent upon the top of the ovary. Stamens with filaments like the petals, but shorter; anthers fuscous. Ovary large, convex and smooth above. Stigmas 5, about  $1\frac{1}{2}$  line long, erect in a column, with recurved tips.

This is evidently a remarkable and very interesting species, although with insignificant flowers. Any reader who may discover it would confer a favour if he or she would kindly send seeds of the plant to me, addressed to the Royal Botanic Gardens, Kew, or through Dr. Pole Evans or Mrs. Bolus.

Jacquin's figure of *M. copticum* seems so exactly to represent the plant of which Thunberg's specimen is only a single branch that I think there can be no doubt of their identity. Linnaeus fil. seems to have described the petals from flowers that had passed into the young fruiting stage, and become rolled up and "setaceous" and bent down upon the top of the ovary.

*M. copticum* of Linnaeus is a totally different plant and identical with *Aizoon hispanicum*, Linn.

**M. articulatum**, Thunb., "Fl. Cap.," p. 415.

There are two sheets bearing this name, marked 1 and 2, which contain three distinct species, all very similar in general appearance, and Thunberg's description will apply to all of them, with the exception of the words "punctato-scabri" and "punctato-scabridum"



as applied to the stem and calyx. These words I interpret to mean, rough from being covered with raised points. The only specimen having this character is on the left-hand side of sheet 2; it seems to have been turned over when remounted, therefore the surface-structure is obscured by the adhesive matter upon it, so that the minute acute points or minute conical hairs can only be clearly seen on a few parts of the specimen, which has alternate branches, all directed to one side of the stem. Each branch ends in an oblique compound cyme composed of 3-6 branchlets bearing 1-3 flowers, and these branchlets are also directed to one side. The specimen seems to be from a growing plant just coming into flower; with apparently linear, half-terete, or perhaps channelled, acute leaves  $2\frac{1}{2}$ - $\bar{5}$  lines long.

The right-hand specimen on this same sheet has its branches placed at right-angles to each other, and they and the calyx were smooth when alive. But this smoothness is obscured on the dried specimen by minute, whitish blisters in places, caused by some secretion of lime or salt. The calyx seems also to be different in form from that of the right-hand scabrid specimen.

Sheet 1 contains two specimens, both alike, which differ from the specimens on sheet 2, by having the stems and calyx covered with blunt papillae (not points), which Thunberg in other cases of the same structure describes as "papilosis." The branches also differ from those of the scabrid plant in being placed at right-angles to each other. Therefore, as Thunberg's description of *M. articulatum* does not fully apply to any other than the left-hand specimen on sheet 2 bearing that name in his Herbarium, and especially as it well agrees with that specimen in the most important character he mentions, that specimen must be taken as being the type of that species, and its synonymy will be:—

*M. articulatum*, Thunb., in "Nov. Act. Acad. Leop.-Car. Ephem.." Vol. VIII, append., p. 10 (1791), and "Fl. Cap.," p. 415.

*M. secundum*, Thunb., "Mus. Nat. Acad. Upsal.," Part II, p. 12, name only (1827).

This specimen of *M. articulatum* seems to me to be the same plant as *M. secundum*, Thunb., which shows the scabrid character much more clearly. And I consider both to be the same species as Burke No. 468, from Dikkop Flats near the Fish River, in Albany Division, and Burke and Zeyher No. 705, which is probably from the same region. As Thunberg collected near the Fish River on the Uitenhage side of it, he may have obtained his specimen from that region. But the localities he gives for *M. articulatum* are "the Karroo near the Olifants River, towards the Bokkeveld Mountains, in Zwartland, and elsewhere." As none of his specimens have the locality attached to them, it is impossible to assign the particular locality to any of them.

The other two species under "*M. articulatum*" I am unable to identify, and consider it inadvisable to describe them from those specimens.

At the original place of publication four varieties are enumerated, and var.  $\delta$  is described as "*major procumbens*" instead of "*minor procumbens*" as given in Thunberg's "Fl. Cap.," ed. Schultes.

Sonder in "Fl. Cap.," Vol. II, pp. 434 and 435, quotes *M. articulatum*, Thunb., as a synonym partly of *M. junceum*, Haw., and partly of *M. granulicaule*, Haw. These determinations are utterly wrong, for neither of Thunberg's specimens is like either *M. junceum* or *granulicaule* of Haworth, both of which have been completely misunderstood and wrongly described by Sonder, both being much more slender species than the plants mistaken for them by Sonder, and by Berger, who has mainly copied from Sonder and other works.

It may not be out of place to call attention to the fact that in consequence of Haworth's *M. junceum* being completely misunderstood, and because many of the species belonging to this group are very similar in appearance, at least half a dozen different species are to be found in Herbaria named *M. junceum*, not one of them, so far as I have seen, being correct.

**M. aureum**, Thunb., "Fl. Cap.," p. 425.

The type consists of one small specimen, collected on the Karroo, between the Olifants River and the Bokkeveld Mountains. As it is not the *M. aureum* of Linnaeus, Sonder renamed it:—

**M. auratum**, Sonder in "Fl. Cap.," Vol. II. p. 449.

**M. aureum**, Thunb. in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII, Append., p. 16 (1791), not of Linnaeus.

It is evidently an erect shrub, with straight stems or main branches 1-1½ line thick, swollen at the nodes, with short, opposite, nearly erect or very ascending branchlets, that are densely papillate and of a pale biscuit colour as described by Sonder, but the main stem has a smooth, greyish-brown bark. Leaves opposite, 3-5 lines long and 1 line thick, obtuse or subacute, apparently subterete, channelled down the face and seemingly papillate; glabrous. Flowers solitary or 2-3 in a cyme at the ends of the branchlets. Pedicels 1-1½ line long, papillate. Calyx papillate; tube (ovary) obconic, about 5 lines in diameter in young fruit; lobes about 3 lines long, broadly ovate, with a blunt dorsal point below the apex of the membranous margin. Petals wanting on the specimen, but described by Thunberg as linear and yellow. He also states that the stigmas are 5, subulate, acute, and erect.

I have given the above description of Thunberg's type specimen because Sonder has evidently confused it with another species collected by Zeyher, from which he has partly described, since he gives as a character, "rudiments of old remaining leaves very spinous," which is not at all the case on Thunberg's specimen.

**M. barbatum**, Thunb., "Prodr.," p. 89, and "Fl. Cap.," p. 418.

One sheet containing three branches of—

**M. barbatum**, Linn., and of "Bot. Mag.," t. 70.

**M. stelligerum**, Haw., "Synop.," p. 278 (1812), and "Rev.," p. 190; Sond. in "Fl. Cap.," Vol. II, p. 447; excluding synonyms, not *M. stelligerum*, Haw. in "Phil. Mag.," (1824), Vol. LXIV, p. 61.

The modern monographers of this genus, Sonder and Berger, do not seem to have noted that Haworth, finding he had misunderstood the plant to which Linnaeus gave the name *M. barbatum* and had originally described that plant under the name of *M. stelligerum*, and another species under the name of *M. barbatum*, has corrected that error in the "Philosophical Magazine" (July, 1824), p. 61, where he transposes the two names, so that the correct synonymy for *M. barbatum*, Linn. is as given above, and for *M. stelligerum* as follows:—

**M. stelligerum**, Haw., in "Phil. Mag." (1824), Vol. LXIV, p. 61, not of Haw., "Synop.," p. 278.

*M. barbatum*, Haw., "Synop.," p. 277; Sonder in "Fl. Cap.," Vol. II, p. 446, excluding synonyms; not of Linnaeus nor of Berger.

The *M. barbatum*, Berger, "Mesemb.," p. 80, on account of its having acute papillae is certainly neither *M. barbatum*, Linn., nor *M. stelligerum*, Haw., both of which have blunt papillae. It is possibly *M. intonsum*, Haw. I do not know what *M. stelligerum*, Berger, "Mesemb.," p. 82, may be, but from the more numerous bristles described as present at the apex of the leaf, it is probably distinct from both *M. barbatum* and *M. stelligerum*, and is possibly a garden hybrid.

Thunberg states that *M. barbatum* grows upon Paardeberg, at Fantam, and elsewhere. But doubtless he confused two or more species in his mind, from seeing similar species in different localities.

**M. bellidiflorum**, Thunb., "Fl. Cap.," p. 418.

This seems to be represented by a sheet bearing the name "*M. bellidifolium* (?)," containing a single flower with two bracts at the base of its pedicel. It is quite indeterminable. No locality is mentioned for it.

**M. bicolorum**, Thunb., "Fl. Cap.," p. 427.

This is represented by a sheet labelled "*M. bicolor*," containing three short flowering branchlets from a plant cultivated in Upsala Botanic Garden, which seem to belong rather to *M. coccineum*, Haw., than to *M. bicolorum*, Linn.

**M. bracteatum**.

There are three sheets bearing this name, one of which has been named by Sonder, the others are respectively marked *a* and *β*. Sheet *a* contains four pieces of a plant cultivated in Upsala Botanic Garden, the others were collected in South Africa. This species is not enumerated in Thunberg's "Flora Capensis."

Sheets *a* and *β* contain specimens of—

**M. mutabile**, Haw., "Obs.," p. 377 (1795).

The other sheet is correctly named by Sonder—

**M. bracteatum**, Ait., "Hort. Kew.," ed. 1, Vol. II, p. 185.

**M. calamiforme**, Thunb., "Fl. Cap.," p. 417.

One small specimen, which is *M. calamiforme*, Linn. Thunberg does not mention a locality for it.

**M. capillare**, Thunb., "Fl. Cap.," p. 419.

There are two sheets bearing this name, marked *a* and *β*, and the specimens on each sheet are separately described by Thunberg as forms *a* and *β* of *M. capillare*.

Sheet *a* contains two specimens, which have been marked by Sonder "*a*" and "*β*." The right-hand specimen, marked "*β*" quite agrees with Thunberg's diagnosis of *M. capillare* and his description *a*. This plant is not *M. capillare*, Linn. f., but is—

**M. brevifolium**, Ait., "Hort. Kew.," ed. 1, Vol. II, p. 188 (1789), and of Haw., "Obs.," p. 274 (1795), but not of Haworth's later works nor of other authors.\*

*M. capillare*, Thunb. in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII, Append. p. 13 (1791), and "Fl. Cap.," p. 419, as to description *a*, which is the only description given at the original place of publication, description *β* being absent from that work; not of Linnaeus fil.

*M. subglobosum*, Haw., "Misc.," p. 62 (1803).

The specimen is a branch or portion of an erect glabrous shrublet, with the main stem about 1 line thick, and the branchlets about  $\frac{1}{2}$  line thick, distinctly papillate. Leaves opposite, about  $1\frac{1}{4}$ – $1\frac{1}{2}$  line long and 1 line thick, somewhat subglobose or very shortly

\* I here wish to point out that *M. brevifolium* of Salm Dyck, of Sonder, and of Berger is a totally different plant from the *M. brevifolium*, Ait., differing from it by having longer leaves, which are not terete or subglobose, but flat above and keeled beneath, and has very different flowers. Its correct synonymy is—

*M. erigeriflorum*, Jacq., "Hort. Schoenbr.," Vol. IV, p. 39, t. 477 (1804).

*M. lateriflorum*, D. C., "Plant. Grass.," t. 164 (1828).

*M. brevifolium*, Salm Dyck, "Mesemb.," § 50, f. 4 (after 1836); Sonder, "Fl. Cap.," Vol. II, p. 342; and Berger, "Mesemb.," p. 95, not of Aiton, nor of Haworth.

This is only one example out of many of the confusion that has been made by later authors accepting as correct the names given by Salm Dyck, apparently without the slightest investigation.

In Haworth's time there were evidently two plants in cultivation under the name of *M. brevifolium*, neither of them being the same as *M. erigeriflorum*. In 1795, Haworth considered them to be forms of one species, but afterwards separated them.

One of them, as described by Haworth ("Obs.," p. 276), had leaves which "rarely measure a quarter of an inch," and were covered with rounded (not acutely pointed) papillae, or, as Haworth states, the papillae "were by no means pubescent." This plant was the true *M. brevifolium*, Ait. The other Haworth describes at first as *M. brevifolium* var. *longum*, and states that it has leaves up to  $1\frac{1}{8}$  inch long, with "pubescent papulae which point downwards and looked in a microscope like minute hooks of glass or ice." This plant is quite unknown to me. In his "Synopsis" and later works Haworth retains this plant alone under the name *M. brevifolium*, and places the true *M. brevifolium*, Ait., as a synonym of *M. subglobosum*, Haw. But Aiton's name, being the older, must be retained,

ellipsoid, papillate, but apparently with smaller papillae than those on the stem. Flowers solitary at the ends of the short branchlets. Pedicel  $2\frac{1}{2}$ –3 lines long, slender. Calyx 5-lobed, papillate; tube (ovary) with a very distinct constriction under the base of the lobes and thereabout 1 line in diameter, and there is also a slight constriction at its base, where it joins the pedicel; lobes unequal,  $\frac{1}{2}$ –1 line long, broadly ovate, obtuse. The other parts of the flower do not admit of examination, and the petals are destroyed. There are some better specimens of this plant at the British Museum, collected by Masson, who travelled with Thunberg. These have leaves 1–2 lines long, varying from subglobose to cylindric. The pedicels vary from 1–6 lines long, and the corolla appears to be about 9–10 lines in diameter, with petals about 4 lines long. The constrictions on the calyx-tube are not so distinct as on Thunberg's specimen.

Thunberg describes the flowers as minute and red. His specimen quite agrees with an original drawing of the typical *M. brevifolium*, Ait., at Kew. The peculiar constriction of the calyx-tube is a very marked feature of both Thunberg's specimen and the drawing of the type plant, in which the corolla is represented as being 8 lines in diameter, with apparently 25–30 acute purple petals.

*M. brevifolium*, Ait., and *M. sessile*, Thunb., are evidently allied species, although one is papillate and the other smooth.

The left-hand specimen, marked "a." resembles *M. brevifolium*, but the branches spread more widely, the leaves are up to 4 lines long, and cylindric and covered with rounded papillae, and the pedicels 8 or more lines long. The calyx-tube below the lobes is also shorter, and the petals are only 2 lines long. It is doubtless the plant alluded to by Thunberg at the end of his description "a." by the words "*Alia est hujus varietas: foliis magis teretibus, subpapulosis*" ("another, with more terete subpapulose leaves, is a variety of this"). I am not able to identify this specimen with any at Kew, nor is there any like it among those collected by Masson at the British Museum. It is quite distinct from *M. erigeriflorum*, having terete (not trigonous) leaves. More ample material is needed to determine whether it is a variety of *M. brevifolium* or a distinct species.

Thunberg collected these two specimens on hills near the Olifants River, towards the north, in Van Rhynsdorp Division.

Sheet  $\beta$  contains two specimens of a plant stated by Thunberg, under description  $\beta$ , to grow near the Gamtoos River, in the Humansdorp Division. It is totally different from the specimens on sheet  $\alpha$ , and is an exceedingly distinct species, differing from every other in the genus by its very slender filiform branchlets.

This plant is—

**M. capillare**, Linn. f., "Suppl.," p. 260 (1781): Thunb., "Fl. Cap.," p. 419, as to description  $\beta$  only. (This description, nor any corresponding to it, does not occur under Thunberg's original description cited above under *M. brevifolium*.)

An irregularly much-branched shrublet, with very slender, woody branches and branchlets, the ultimate of which are filiform and scarcely a quarter of a line thick, thickened at the nodes in a somewhat bead-like manner, of a dark reddish-brown or chocolate colour (possibly purple when alive), smooth and shining on the older parts, but marked with minute white dots on the younger parts, the dots being minute dried-up papillae. The leaves have mostly fallen: those that remain are 1–2 lines long and less than half a line thick, and, according to Thunberg, slightly flattened above, obtuse, papillate. Pedicels solitary, 3–6 lines long. The specimen is not in flower, and the few capsules upon it are damaged, but appear to be very shortly and broadly obovate, about 2 lines in diameter. Thunberg describes the flowers as being "minute, reddish, with reflexed sepals."

I do not match this plant with any specimen in the Kew Herbarium. The swollen nodes (resembling tiny oval beads) of its remarkably slender, brown branchlets distinguish it at once from all other species.

I find that there is no specimen of this plant in the Herbarium of Linnaeus fil. at the Linnean Society, so that, as in so many other cases, he undoubtedly described from Thunberg's specimens, which must be regarded as the type.

**M. ciliatum**, Thunb., "Fl. Cap.," p. 416.

One sheet of good specimens.

This plant has hitherto been included in the genus *Mesembryanthemum*, but its appearance is so distinctive that I expected it would differ in floral structure from that genus, and upon dissection I found this to be the case; for besides the very remarkable character of the ring of deflexed hairs at the base of the leaf-sheaths, I find the petals are united into a short tube at their base, the ovary is nearly superior, and the capsule of quite a different type from that of *Mesembryanthemum*. I therefore propose to found the genus *TRICHOCYCLUS* for its reception and that of two allied species, which will be described at the end of this account of Thunberg's species.

#### TRICHOCYCLUS, N.E.Br.

Dwarf bushy plants with erect succulent branches. Leaves opposite, united below into a short sheath, which is ciliate all around its very base with deflexed hairs, persistent. Calyx 5-lobed. Petals numerous, united into a short tube at the base. Stamens numerous, perigynous. Ovary nearly superior, with only a short basal portion immersed in the calyx-tube, 5 (-6?) -celled; stigmas 5 (-6?), subulate; ovules, few in each cell. Capsule 5 (-6?) -valved; valves sub-erect when open, wingless, and without expanding keels, but with a pair of erect, free, ovate, obtuse processes arising from their base within that close over the seeds and somewhat resemble valves of an inner capsule; they are probably the homologues of the cell-wings of the capsule of *Mesembryanthemum*. Seeds few in each cell, compressed. The name is derived from the Greek *Thrix*, a hair, and *Kyklos*, a circle, in allusion to the circle of deflexed hairs at the base of the leaf-sheaths.

**T. CILIATUS**, N.E.Br.—*Mesembryanthemum ciliatum*, Ait. "Hort. Kew," ed. 1, Vol. II, p. 179 (1789); Thunb. in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII, Append., p. 11 (1791).

Collected between the Olifants River and Bokkeveld Mountains, in the Van Rhynsdorp Division.

This plant is identical with Pearson No. 3941, from south-west of Bitterfontein, in the same region.

**M. corallinum**, Thunb., "Fl. Cap.," p. 416.

One specimen in a flowerless condition. The original reference is—

**M. corallinum**, Thunb. in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII, Append., p. 12 (1791).

A shrublet, hard and woody except at the young parts, much-branched, and apparently stout at the basal part, the lower part of Thunberg's type being 4 lines thick, the branches much less stout, and the branchlets rather less than 1 line thick, constricted at the nodes into short joints 2-3 lines long, glabrous, evidently smooth when alive. Leaves 2-3 lines long and about  $\frac{3}{4}$  line broad and as much in thickness, subterete, slightly flattened above, obtuse or subacute, incurved-spreading, glabrous. According to Thunberg, the flowers are solitary and terminal at the apex of the branchlets, sessile. Calyx 5-lobed, green; lobes terete erect. Petals many, linear, spreading, white.

Thunberg states that this grows on dry hills near the Olifants River, towards the north, and in the Karroo below the Bokkeveld, and elsewhere.

I have not been able to match this with any specimen in the Kew Herbarium, but there is a larger specimen of it in the British Museum, collected by Masson when travelling with Thunberg.

**M. cordifolium**, Thunb., "Fl. Cap." p. 417.

One sheet of this plant, collected in a wood near Zeekoe River, in the Humansdorp Division. It is—

**M. cordifolium**, Linn. f., "Suppl.," p. 260 (1781), and is identical with Zeyher No. 2621.

**M. crassifolium**, Thunb., "Fl. Cap." p. 421.

There is one sheet of this containing two specimens, for which Thunberg gives the locality: hills in Zwartland, Malmesbury Division. These specimens belong to—

**M. filicaule**, Haw., "Misc.," p. 87 (1803).

**M. crassifolium**, Thunb., "Prodr.," p. 90 (1800), not of Linnaeus.

Thunberg's specimens are identical with MacOwan, "Herb. Aust.-Afr." (1731), from the foot of Devil's Peak.

Sonder in "Fl. Cap.," Vol. II, p. 407, refers *M. crassifolium*, Thunb., to *M. reptans*, Ait., but that is a very different species, with larger, prominently dotted (not smooth) leaves and much larger yellow or white (not rosy) flowers.

**M. debile**, Haw., also placed by Sonder as a synonym of *M. reptans*, Ait., is likewise totally distinct from the latter, and I believe it to be the plant distributed by Schlechter under No. 9241 as *M. filicaule* (which it certainly is not) from French Hoek.

**M. criniflorum**, Thunb., "Fl. Cap.," p. 411.

One sheet containing four good specimens, collected on sandhills near Capetown. These specimens agree with those of MacOwan, "Herb. Austr.-Afr." (1745), from near Sea Point. Their correct synonymy is—

**M. criniflorum**, Linn. f., "Suppl.," p. 259 (1781); Thunb., "Prodr.," p. 88 (1800).

**M. limpidum**, Ait., "Hort. Kew.," ed. 1, Vol. II, p. 182 (1789).

**M. spathulatum**, Willd., "Sp. Pl.," Vol. II, p. 1025 (1799), not of Thunberg.

**M. tricolor**, Willd., "Hort. Berol.," Vol. I, p. 22, t. 22 (1803), not of other authors.

(*N.B.* Willdenow's work was issued in parts so that the date 1816 on the title-page is very misleading, that being the date when Volume II was issued as a whole, but it was issued in parts previously.)

The colour of the flower varies.

Sonder and Berger have erroneously quoted *M. tricolor*, Willd., as belonging to *M. pyropaeum*, Haw. They also erroneously quote Houttuyn as being the author of *M. criniflorum*, whilst Thunberg ("Fl. Cap.," p. 411) attributes the name "*M. capense*" to Houttuyn, but neither of these names are to be found at the place quoted in Houttuyn's work; the plant referred to being *M. pugioniforme*, Houtt., "Nat. Hist.," Deel II, t. 53, separately issued as Handleid., "Planten tot de Kraidkunde," Vol. IX, p. 32, t. 53, which represents a form of *M. pomeridianum*, Linn., in fruit, with capsules having 16–20 valves and cells, whilst *M. criniflorum* has only 5 valves and cells to its capsules. But authors have paid little heed to fruit-characters in this genus.

**M. crystallinum**, Thunb., "Fl. Cap.," p. 413.

There are two sheets of this, containing specimens that appear to be *M. crystallinum*, Linn. The locality given for it by Thunberg is near the Sundays River, but sheet 1 is labelled as being from a plant cultivated in Upsala Botanic Garden.

**M. decussatum**, Thunb., "Fl. Cap.," p. 414.

One sheet with two specimens upon it, collected on dry hills near the Olifants River, towards the north, in the Karroo below the Bokkeveld. Its synonymy is—

**M. brachiatum**, Ait., "Hort. Kew.," ed. 1, Vol. II, p. 191 (1789), and Haw., "Misc.," p. 58.

**M. decussatum**, Thunb., "Prodr.," p. 88 (1800).

This is the same plant as Pearson No. 5541, which has been erroneously distributed as *M. geniculiflorum*, Linn., from north of Nieuwerust, in the Van Rhynsdorp Division, which at Kew is represented by a small and very poor specimen that has been grazed by sheep or cattle, but is undoubtedly the same plant as *M. decussatum*, Thunb.

**M. deltoides**, Thunb., "Fl. Cap.," p. 418.

One sheet with two good branches upon it of *M. deltoides*, Linn., from the mountains of Roodezand Kloof, now New Kloof, near Tulbagh.

**M. difforme**, Thunb., "Fl. Cap.," p. 423.

One specimen, in unripe fruit. This is a small plant scarcely an inch high, and quite different from *M. difforme*, Linn., as I have elsewhere pointed out, its synonymy being—

**M. exiguum**, N.E.Br., in "Journ. Linn. Soc. Bot.," Vol. XLV, p. 102 (1920).

*M. difforme*, Thunb., "Prodr.," p. 90 (1800), not of Linnaeus.

It seems to belong to the same group as *M. rostratum*, Linn. The specimen has a woody root stock bearing a tuft of four growths. Each growth (including flower) is 8–9 lines long and about 4 lines in diameter, with three pairs of leaves. The basal pair are 6 lines long and 1–1½ line broad (the dimensions here given are doubtless much less than those of the living plant), widely spreading, united at the base into a sheath only 1½ line long; they appear to be concave above, very rounded on the back, with a keel at the apex, which is truncate in side view, and has a minute point, glabrous, but covered with minute hard papillae or granules. The second pair are erect and united at the base into a cylindrical sheath 4½–5 lines long, with two compressed, acute leaf tips 2 lines long, papillate like the lower leaves and keeled down the back; the sheath in the dried specimen is thin, somewhat membranous, and whitish. Within this sheath the third pair of leaves is enclosed, which appear to be free nearly to the base and just like the basal pair, but they are erect, with their upper surfaces pressed together. They probably ultimately spread widely and become in turn a basal pair. Pedicel 4–5 lines long, with a pair of small leaf-like bracts at its base. This bears a nearly ripe capsule, no flower being present on the specimen. Calyx apparently 5-lobed to the top of the ovary; lobes 2–2½ lines long, some leaf-like, keeled and minutely tuberculate or papillate, the others broadly ovate, with membranous margins. Petals numerous, their shrivelled remains about 5 lines long when wetted. Stigmas 5, about 1½ line long, subulate, recurved-spreading.

Sonder, in the "Flora Capensis," quotes this very distinct species on p. 395 as being a synonym of *M. denticulatum*, Haw., and on p. 399 as a synonym of *M. namaquense*, Sond. The former is a totally different plant, and the latter I have not seen, but it is described as having leaves 3 lines broad and a "peduncle three to four times longer than the leaves." So that it is evident that Thunberg's plant is different from both.

**M. digitiforme**, Thunb., "Fl. Cap.," p. 412.

One sheet, with two perfect growths and two flowers upon it. Collected in the Karroo between the Olifants River and the Bokkeveld Mountains, in the Van Rhynsdorp Division. It is—

**M. digitatum**, Ait., "Hort. Kew.," ed. 1, Vol. II, p. 181 (1789).

**M. digitiforme**, Thunb., in "Acad. Leop.-Car. Ephem.," Vol. VIII, Append., p. 6 (1791)

**M. dolabriforme**, Thunb., "Fl. Cap.," p. 424.

Two sheets marked 1 and 2.

Sheet 1 contains a specimen of some stemless species in fruit, with two leaves. It is unknown to me, and probably new, but quite indeterminable.

Sheet 2 contains a flowering branch and a separate flower of *M. dolabriforme*, Linn.

The locality given by Thunberg is "on very dry hills at Hantam, near the Roggeveld Mountains."

**M. edule**, Thunb., "Fl. Cap.," p. 426.

One sheet, containing two flowering branches. Thunberg states that this plant, which is *M. edule*, Linn., grows near Capetown, Zwartland, and elsewhere.

**M. emarcidum**, Thunb., "Fl. Cap.," p. 415.

Two sheets, marked 1 and 2, stated to have been collected on the Bokkeveld and elsewhere in the Karroo.

Sheet 1 contains two species, a branch (which I have marked "A" on the sheet) and four pieces (which I have marked "B").

"A" is the plant described by Thunberg as *M. emarcidum*, Thunb., in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII. Append., p. 9 (1791); *M. anatomicum*, Haw., "Misc.," p. 50 (1803).

This specimen appears to me to be the same as Pearson No. 6434, from Khoms Ravine, in the Khamiesberg. At the original place of publication, Thunberg states that this species has 4 erect stigmas, and grows in the Bokkeveld mountain region, without mention of any other locality. There is a good specimen of it at the British Museum, collected by Masson when travelling with Thunberg.

"B" is *M. expansum*, Linn.

Sheet 2 contains one good specimen of *M. expansum*, Linn.

**M. emarginatum**, Thunb., "Fl. Cap.," p. 424.

One specimen from Upsala Botanic Garden. The specimen is a poor one, but probably is *M. emarginatum*, Linn.

**M. expansum**, Thunb., "Fl. Cap.," p. 415.

Two sheets marked 1 and 2. Sheet 1 contains a very fine flowering specimen from Upsala Botanic Garden and sheet 2 a good specimen in fruit. The locality given for this species is near Dutoits Kloof. Both specimens are—

**M. tripolium**, Linn.

*M. expansum*, Thunb., "Prodr.," p. 88 (1800), not of Linnaeus.

Thunberg's specimens agree with those of Bolus No. 7930, from Orange Kloof on Table Mountain.

**M. falcatum**, Thunb., "Fl. Cap.," p. 422.

One specimen. No locality is quoted for it. The plant is *M. lacinum*, Haw., "Obs.," p. 383 (1795); *M. falcatum*, Thunb., "Prodr.," p. 90 (1800), not of Linnaeus.

**M. fasciculatum**, Thunb., "Fl. Cap.," p. 417.

One specimen, collected near Sundays River, in the Uitenhage Division.

This species has been wrongly quoted by Sonder in "Fl. Cap.," Vol. II, p. 432, as a synonym of *M. tetragonum* Thunb., which is an utterly different plant of erect bushy habit, whilst *M. fasciculatum* is prostrate.

I have been unable to match *M. fasciculatum*, Thunb., with any specimen in the Kew Herbarium, but it is evidently allied to *M. crassifolium*, Linn., which grows in the region of Capetown (Wolley Dod No. 1625), and is probably the eastern representative of that species, but seems to root much more freely at the nodes than *M. crassifolium* does. The following is a description of Thunberg's plant:—

**M. fasciculatum**, Thunb., in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII. Append., p. 11 (1791).

Stem prostrate, rooting at the nodes, about  $1\frac{1}{2}$  line thick, with arching internodes  $1\frac{1}{2}$ –2 inches long, glabrous, smooth, of a pale biscuit colour, bearing at the nodes short, erect, leafy-flowering shoots 1–2 inches high, including the flower, each with 4–5 pairs of



crowded ascending-spreading leaves 6-7 lines long and 1 line thick, which appear to have been nearly terete and very obtuse at the apex, and are described by Thunberg as "scarcely trigonous." Like some other species from the same region, the dried leaves have numerous dot-like blisters formed by crystalline particles of some salt or lime. Pedicel terminal, solitary, bractless, about 5 lines long. Calyx 4-lobed, according to Thunberg, but the lobes cannot be properly seen on the specimen. The flower seems to be in a closed condition, and measures about 5 lines from the base of the calyx to the tips of the apparently lax petals, which are white, according to Thunberg.

**M. fastigiatum**, Thunb., "Fl. Cap.," p. 413.

One sheet containing two good specimens, collected on very dry hills near the Olifants River, towards the north, in the Van Rhynsdorp Division.

De Candolle, and following him Sonder, and Berger have maintained the name *M. fastigiatum*, Haw., which was published in 1795, and given to the four-years older *M. fastigiatum*, Thunb. the new name of *M. papuliferum*, even overlooking the fact that Haworth had also long before bestowed a new name upon it. Thunberg's name, however, must be maintained, and as no good description of the plant exists, the following is an account of Thunberg's type specimens:—

**M. fastigiatum**, Thunb., in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII, Append., p. 7 (1791).

*M. erectum*, Haw., "Misc. Nat.," p. 53 (1803).

*M. papuliferum*, D. C., "Prodr.," Vol. III, p. 448 (1828).

An annual 1½-2½ inches high, and as dried, broadly obconic in outline and 2-3 inches in diameter across the flat top, densely covered with watery papillae on stems, leaves, and calyx. One specimen is divided at the base into two, and the other into three main branches, each of which at about half an inch above the base is divided into two or three branches ½-¾ inch long: each of these either bear one to three flowers at the apex or divide once more before doing so, the whole forming a flat-topped cyme. All the branches thicken upwards in an obconic manner. The leaves have disappeared from the lower nodes, and the few that remain are much shrivelled, 5-7 lines long and 1 line thick; they seem to have been nearly terete, or perhaps more or less flattened above, obtusely rounded at the apex. The flowers seem to be nearly sessile or but shortly pedicellate. Their structure I have not examined, but Thunberg describes the calyx as 5-lobed; the lobes as being ovate, obtuse, purple, and the corolla is snow-white.

I find that there are much larger specimens of this plant at the British Museum, collected by Masson.

The plant later described as *M. fastigiatum*, by Haworth, requires to have a new name; therefore, I propose for it that of—

**M. plenifolium**, N.E.Br.

*M. fastigiatum*, Haw., "Obs.," p. 210 (1795), not of Thunberg.

**M. filiforme**, Thunb., "Fl. Cap.," p. 417.

One specimen, collected at Hantam.

This plant is not a *Mesembryanthemum*, but is a species of *Galenia*, and may therefore bear the following name:—

**Galenia filiformis**, N.E.Br.

*Mesembryanthemum filiforme*, Thunb., "Prodr.," p. 89 (1800), and "Fl. Cap.," p. 417.

*Aizoon microphyllum*, Bartl., in "Linnaea," Vol. VII, p. 541 (1832).

This plant was left undetermined by Sonder, and it seems to be distinct from *Galenia herniariaefolia*, Fenzl., under which Sonder places *Aizoon microphyllum* as a synonym. It was evidently covered with minute watery papillae when alive, and the shrunk cells in some places have somewhat the appearance of pubescence, but I do not perceive any real hairs upon this or on *G. herniariaefolia*, such as Sonder mentions in his Key to the species of *Galenia*.

**M. forficatum**, Thunb., "Fl. Cap." p. 422.

The specimen representing this is—

**M. acinaciforme**, Linn.

*M. forficatum*, Thunb., "Prodr.," p. 90 (1800), not of Linnaeus.

It was collected on the Karroo.

**M. geniculiflorum**, Thunb., "Fl. Cap." p. 414.

The specimen of this is the true *M. geniculiflorum*, Linn., and is labelled "*culta in horto gryphico*." It is identical with Bolus No. 9236, from near the Montagu Baths.

**M. glaucum**, Thunb., "Fl. Cap." p. 427.

One sheet containing two specimens. The locality is not mentioned by Thunberg.

The right-hand specimen may possibly be *M. glaucum*, Linn., but the flower is detached.

The left-hand specimen is *M. roseum*, Willd., "Enum. Plant. Hort. Berol.," p. 535 (1809).

**M. hispidum**, Thunb., "Fl. Cap." p. 418.

There are five sheets so named, marked *a*, *β*, *γ*, *δ*, and *ε*, of which Thunberg gives separate descriptions under letters *a*, *β*, and *γ*, which presumably correspond with his sheets so lettered. He evidently regarded them as forms of one species.

Sheet *a* contains a good specimen of *M. candens*, Haw., "Rev.," p. 186 (1821). It is stated to grow on sandy plains, and is identical with Zeyher No. 2592, from near Port Elizabeth.

Sheet *β* contains two branches of *M. calycinum*, Haw., "Rev.," p. 187 (1821). It is the plant described by Thunberg under *β*, for which he gives no locality, but it is the same plant as Bolus No. 5050, from near Mitchell's Pass.

Sheet *γ* contains one poor specimen of *M. micans*, Linn. It may be the plant described by Thunberg under *γ*, but scarcely agrees with the description. The locality given for *γ* is Karroo between Olifants River and the Bokkeveld Mountains, in the Van Rhyndorp Division.

Sheet *δ* is named "*M. hispidum* (?)." It is an undescribed species, unlocalized by Thunberg, but identical with a branch mixed with another species collected by Bolus near the Montagu Baths, and distributed under No. 6715, which I describe under the following name:—

**M. praecultum**, N.E.Br.

An erect bushily-branched shrub, probably less than a foot high, the specimen seen being about 6 inches high, with the stoutest part of the stem less than 1 line thick. The young parts, including leaves and calyx, densely papillate, the old parts with a somewhat smooth greyish or brown bark. Internodes 3-6 lines long. Leaves opposite, 1-2 lines long, subglobose or nearly as thick as long, or shortly cylindric, very obtuse; most of them have fallen from the specimens. Flowers very numerous, produced all along the main and lateral branches at nearly every node, solitary in the axil of each fallen leaf. Pedicel ascending, 3-5 lines long. Calyx 5-lobed to the top of the ovary; lobes subequal, nearly 2 lines long, oblong, obtuse. Petals numerous, about 3 lines long and  $\frac{1}{3}$ - $\frac{1}{2}$  line broad, obtuse, tapering downwards. Stamens numerous. Stigmas 5, spreading,  $1\frac{1}{2}$  line long, slender, subulate, arising from a 5-lobed crown-like structure on the top of the ovary. Capsule  $1\frac{1}{2}$  line long and 2 lines broad, shortly and broadly obovate, convex at the top, 5-valved.

Sonder in "Fl. Cap.," p. 442, has referred *M. hispidum* (*δ*) of Thunberg's Herbarium to *M. brevifolium*, Ait., but that is a very different plant, with totally different and smaller flowers (see under *M. capillare*). The *M. brevifolium*, Sonder, is a mixture of three or more species.

Sheet *ε* contains two branches of what I believe to be *M. floribundum*, Haw., "Misc.," p. 100 (1803). It is not localized.

From the above it will be noted that neither of Thunberg's specimens belong to *M. hispidum*, Linn.

**M. laeve**, Thunb., "Fl. Cap.," p. 425.

One specimen, collected near Sundays River, in the Uitenhage Division. As the name *M. laeve* had previously been used by Aiton, Haworth changed the name to—

**M. Thunbergii**, Haw., "Misc.," p. 86 (1803).

*M. laeve*, Thunb., in "Acad. Leop.-Car. Ephem.," Vol. VIII, Append., p. 16 (1791), not of Aiton.

Thunberg's specimen agrees with those of Rogers No. 4656, collected near Zwartkops, in the Port Elizabeth Division.

This eastern plant is similar to and might be mistaken (in the dried state) for *M. dissimile*, N.E.Br., which grows near Capetown, but differs from that species by having more obtuse leaves, no bracts at the base of the pedicel, and apparently smaller flowers. But the two require to be compared when alive, so that their distinctive characters can be properly contrasted. The prostrate stems of *M. Thunbergii* are 2 lines thick, very smooth, and pale brownish.

**M. lanceum**, Thunb., "Fl. Cap.," p. 417.

One sheet, containing two good specimens. The locality is not stated. There is another specimen of it from Upsala Botanic Garden, named "*M. tripolium*," and also another mounted on the sheet of *M. oratum* (which see). The original reference for it is *M. lanceum*, Thunb., "Prodr.," p. 89 (1800).

Sonder's description of this, in "Fl. Cap.," Vol. II, p. 455, is fairly correct, except that I believe the stems to be procumbent or straggling. Possibly the plant figured by De Candolle, "Plant. Grasses," t. 47, as *M. expansum*, may be *M. lanceum*, Thunb.; it does not seem to be *M. expansum*, Linn. It also seems closely allied to *M. varians*, Haw., and may prove to be that species when better known.

**M. lineare**, Thunb., "Fl. Cap.," p. 411.

One sheet of specimens, for which the localities Zwartland and Groenekloof, in the Malmesbury Division, are given. This plant is—

**M. gramineum**, Haw., "Obs.," p. 470 (1795).

*M. lineare*, Thunb., "Prodr.," p. 88 (1800).

*M. pyropaeum*, Haw., "Suppl.," p. 99 (1819).

*M. tricolor*, Sims, "Bot. Mag.," t. 2144 (1820), and Haw. "Rev.," p. 163 (1821), not of Willdenow.

Thunberg's specimens agree with those of Wolley Dod No. 1796, from sandhills at Duinefontein.

*M. gramineum* was founded upon the figure and description in Petiver, "Gazophylacium," Vol. I, p. 10, t. 88, f. 6, and "Cat.," Vol. II, p. 4, No. 488, which clearly represents this plant, although Petiver described the petals as yellow; but, as he seems to have had only dried specimens, he was perhaps misled by the yellowish colour they sometimes assume when dried.

Berger, "Mesemb.," p. 38, also quotes *M. clavatum*, Haw., as a synonym of this species, but that name was likewise founded upon a plant figured by Petiver on the same plate (t. 88, f. 7), which represents quite a different plant with creeping and probably perennial stems. The *M. tricolor*, Willd., quoted by the above authors for this species, is *M. criniflorum*, Linn. f. (which see).

**M. linguaeforme**, Thunb., "Fl. Cap.," p. 424.

This is represented by four detached leaves and three flowers, labelled as from a plant cultivated in Upsala Botanic Garden, which certainly do not belong to *M. linguiforme*, Linn., but probably to—

**Glottiphyllum longum**, N.E.Br., in Gardener's "Chronicle" (1922), Vol. LXXI., p. 9

*Mesembryanthemum longum*, Haw., "Obs.," p. 177 (1795).

**M. loreum**, Thunb., "Fl. Cap.," p. 421.

One flowerless specimen from Upsala Botanic Garden. Thunberg states that it grows on the Karroo between Olifants River and the Bokkeveld. The specimen, however, does not belong to *M. loreum*, Linn., but is probably *M. crassifolium*, Linn., and is identical with Schlechter No. 8316 (from Zout River) and Wolley Dod No. 1625 (from Governor's Cottage).

**M. micans**, Thunb., "Fl. Cap.," p. 426.

One sheet containing three specimens, collected below the Bokkeveld Mountains.

This plant is not *M. micans*, Linn., and it is erroneously quoted as a synonym of *M. collinum*, Sond. by Sonder in "Fl. Cap.," Vol. II, p. 443. That species, however, was founded upon specimens collected by Zeyher near the Gauritz River, in the Mossel Bay Division, a widely different locality from that of Thunberg's plant which is a different species and identical with Pearson No. 4903, from Hottentots Kloof, in the Ceres Division, which is stated to be a "weak herb,  $\frac{1}{2}$ -1 foot; among bushes." But it is evidently weak and lanky and only partly woody from growing among or in the shade of bushes; otherwise, it is quite identical with Thunberg's shrubby specimens. I propose the following name for it:—

**M. exspersum**, N.E.Br.

*M. micans*, Thunb., "Prodr.," p. 91, not of Linnaeus.

A dwarf shrublet, 6-12 inches high, with woody branches about  $\frac{3}{4}$  line thick and more slender branchlets. Branches opposite, rather widely diverging at their origin, with internodes 3-15 lines long, the young parts ascending, curved or flexuose, with a smooth brown bark on the old parts, and the young leafy branchlets purplish or brownish, covered with scattered longitudinally compressed papillae. Leaves opposite, 2-4 lines (5-6 lines on Pearson's specimen) long,  $\frac{1}{2}$  line thick on the dried specimens, erect or more or less spreading, not united at the base, distinctly concave-channelled down the face, rounded on the back, obtuse, of equal thickness throughout, not thickened at the apex, mostly straight, very densely covered with smaller papillae than those on the stem, whitish. Flowers solitary, terminal: pedicels  $1\frac{1}{2}$ -2 $\frac{3}{4}$  inches long, slender, brownish or purplish, with scattered papillae like those on the stem, which become crowded at the apex. Calyx 5-lobed down to the top of the short and very broadly obconic ovary, densely papillate; lobes subequal,  $1\frac{1}{2}$ -2 lines long, deltoid or deltoid-ovate, acute, two (or three?) of them with broad membranous margins, not appendaged. Petals numerous, 4-4 $\frac{1}{2}$  lines long, linear, obtuse or notched at the apex, apparently of some shade of red.

**M. moniliforme**, Thunb., "Fl. Cap.," p. 415.

One sheet, containing two good specimens of the plant in a resting condition, that is, without either leaves or flowers. The original reference is—

**M. moniliforme**, Thunb., in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII, Append., p. 7 (1791).

Thunberg's specimens represent the plant as about 3 inches high, with stout, crowded branches 4-6 lines thick, with numerous annular constrictions 1-1 $\frac{1}{2}$  line apart, giving them the appearance of being formed of a number of flat, button-like beads, dark brown, glabrous.

This is not quite like the plant I described and figured, partly from memory, in the "Journal of the Linnean Society," Vol. XLV, p. 116, t. 5, f. 10; as the joints of that plant, as I remember them, were certainly not so flattened as in Thunberg's specimens, yet for all that, it may be specifically the same.

Thunberg collected it on hills near the Olifants River, towards the north, in the Van Rhynsdorp Division.

**M. noctiflorum**, Thunb., "Fl. Cap.," p. 414.

One specimen from a plant cultivated in Upsala Botanic Garden. It is *M. noctiflorum*, Linn.

**M. nodiflorum**, Thunb., "Fl. Cap.," p. 413.

Three sheets of good specimens, all of which belong to *M. nodiflorum*, Linn. It is stated to grow near Olifants River, in the Karroo below the Bokkeveld, in Zwartland, and elsewhere. The specimens quite agree with Schlechter No. 11068, from Eenkokerboom.

Sonder in "Fl. Cap.," Vol. II, p. 452, places *M. apetalum*, Linn. f. and *M. copticum*, Linn. as synonyms of *M. nodiflorum* (in which Berger follows Linn.), but they are both perfectly distinct from it and from each other, *M. copticum*, Linn. being the same as *Aizoon hispanicum*, Linn., and *M. apetalum*, Linn. f. is described above.

**M. ovatum**, Thunb., "Fl. Cap.," p. 417.

This name is represented in Thunberg's Herbarium by one sheet containing two very distinct species.

The right-hand specimen is identical with Zeyher No. 2624, from the valley and hills of the Zwartkops River, in the Uitenhage Division, and is undoubtedly the plant intended by the name *M. ovatum*, in Thunb., "Fl. Cap.," p. 417, for which Thunberg gives no locality.

The left-hand specimen is a branch of *M. lanceum*, Thunb.

But upon noticing the more erect slope of the letters and the different ink with which they appear to have been written, that the specific name "*ovatum*" was written at a different time from the name "*Mesembryanthemum*," I consulted the original description of *M. ovatum*, Thunb., and found that he there describes a totally different plant, which is not represented by any specimen in his Herbarium, nor can I find any in the Kew Herbarium that corresponds to his description. From this I think it probable that his original specimen must have got lost or destroyed, and that at a later date, when compiling his "Flora Capensis," he mistook the ovate-leaved plant (like Zeyher No. 2624) for his *M. ovatum*, and because he found it did not correspond with his original description, wrote a fresh one, made from the specimen he had before him, which is flowerless, and added such details of the flower as are given, and the statement that it is papulose, from his original description. Thus we have two very distinct species described by Thunberg under the name of *M. ovatum* at different dates. The plant originally described appears to be a very small papillate annual, whilst that later described has long (prostrate?) stems, and is glabrous and smooth or not conspicuously papillate. The following is a translation of the original description:—

**M. ovatum**, Thunb., in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII. Append., p. 8 (1791), not of any other book or author.

Plant dwarf, diffuse. Root annual, fibrous. Stems several, radical, as long as a finger-nail or an inch long, somewhat erect, simple, terete, leafless or slightly leafy (probably with or without bracts) at the middle, papulose, covered with crystalline scales (can elongated dried watery papillae be intended?). Radical leaves several (or many), larger, stem-leaves fewer, fleshy, opposite, connate, the length of a finger-nail or an inch long, flat, obovate, tapering below, and again widened at the base, obtuse, entire, papulose above, papulose and covered with hyaline scales beneath, viscid, green or purple. Flowers terminal, solitary, white. Calyx fleshy, 5-partite, papulose, crystalline and scaly; lobes 1 line long, with three a little longer, ovate, obtuse, concave, with a thin membranous margin. Petals numerous, inserted on the calyx and longer than it, linear, entire, white. Stamens very many, inserted at the base of the calyx and shorter than it; filaments distinct, filiform, glabrous, white or purple; anthers ovate, didymous, yellow. Nectary crowning the ovary, affixed in a wreath to the margin of the calyx, crenulate, green. Ovary depressed, 5-grooved, glabrous. Styles 5, erect, subulate, acute. Capsule fleshy, depressed-conical, 5-valved, 5-celled. Seeds numerous.

Thunberg states that this plant grows near the Cape, on sandhills, and that it is common. I cannot, however, as above stated, find any plant in the Kew Herbarium that agrees with the above description. Can this plant be a form of *M. criniflorum*, Linn. f.?

As the above described plant must take precedence for the name *M. ovatum*, that in Thunberg's Herbarium now bearing that name requires to be renamed, and as I find it to be identical with a plant described by Berger, the following will be its synonymy:—

**M. Haeckelianum**, Berger in "Engler Bot. Jahrb.," Vol. XLV, p. 224 (1910).

*M. ovatum*, Thunb., "Fl. Cap.," p. 417 (1823), not of "Nov. Act. Acad. Leop.-Car.-Ephem.," Vol. VII, Append., p. 8 (1791).

*M. elongatum*, Eckl. & Zey., "Enum. Plant. Afr. Austr.," p. 321 (1836), and in "Linnaea," Vol. XIX, p. 658 (1847).

*M. angulatum* var. *ovatum*, Sond. in "Fl. Cap.," Vol. II, p. 454, partly (1862).

Root-stock perennial. Stems probably annual ascending or perhaps prostrate with ascending branches, up to 18 inches long and  $1\frac{1}{2}$  line thick, angular, glabrous, and apparently smooth, with internodes up to 2 inches long. Leaves opposite,  $\frac{3}{4}$ – $1\frac{3}{4}$  inch long, 3–9 lines broad, lanceolate or ovate, acute, tapering into a petiole at the lower third, entire, glabrous, apparently smooth, fleshy. Flowers solitary in the forks of the stems or axillary. Pedicels  $\frac{1}{2}$ –1 inch long, moderately stout, glabrous, bractless. Calyx very unequally 4-lobed, the two larger lobes 6–10 lines long and 3–4 lines broad, lanceolate or ovate-lanceolate, acute, leaf-like, the two smaller 4–5 lines long, with a membranous ovate basal part and a subulate point. Petals numerous, about 6 lines long and  $\frac{1}{2}$ – $\frac{3}{4}$  line broad. Stamens numerous. Style  $\frac{1}{2}$ – $\frac{3}{4}$  line long, stout: stigmas 4, short, apparently flat, acute.

Valley and hills of the Zwartkops River, in the Uitenhage Division, Zeyher No. 2624, and without locality, but probably from the same region, a flowerless specimen in Herb. (Thunberg).

Sonder in "Fl. Cap.," p. 454, quotes the plant named *M. ovatum* in Thunberg's Herbarium and Zeyher No. 2623 under *M. angulatum* var. *ovatum* as both being the same plant, whereas they are entirely different, the *M. ovatum*, Herb. (Thunberg), being *M. Haeckelianum* just described, and Zeyher No. 2623 being *M. angulatum*, Thunb.

**M. papulosum**, Linn. f., "Suppl.," p. 259 (1781).

One sheet containing three specimens in fruit. This species is not mentioned in Thunberg's "Flora Capensis," nor is there any indication of locality on the back of the sheet. But as it was described by Linnaeus fil. from a plant cultivated in Upsala Botanic Garden, it may have been raised from seed obtained from these fruiting specimens, or these specimens may have come from Upsala Garden: and as they accurately agree with the description of Linnaeus fil. they must be accepted as the type of the species, for there is no specimen of the plant among those from the Herbarium of the younger Linné, and as he described many species from Thunberg's specimens, these may even possibly be those from which he described. He quotes, however, *M. Aitonis*, Jacq. as a synonym of *M. papulosum*. This is an error, for *M. Aitonis* has angular (not terete) stems, quite different leaves, straight (not deflexed) pedicels, and broad obovate (not subulate) tips to the calyx-lobes. *M. Aitonis* is also an eastern species from the Uitenhage Division, whilst *M. papulosum* grows near Capetown, for it is identical with Wolley Dod No. 2864, from the shore between Sea Point and Camps Bay. The plant is an annual, covered with large papillae, and is well marked by the peculiar curvature just below the calyx of the 6–8 lines long pedicels, causing the flowers to nod. The petals are small and yellow, "half as long as the shorter calyx-lobes."

**M. pinnatifidum**, Thunb., "Fl. Cap.," p. 427.

Two sheets; one contains a specimen from Upsala Botanic Garden. The localities given by Thunberg are Mountains of Roode Zand, near Tulbagh Waterfall, and on the Paardeberg. All belong to—

**M. pinnatifidum**, Linn. f., "Suppl.," p. 260 (1781).

*M. pinnatum*, Thunb., in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII, Append., p. 15 (1791).

The specimens agree with those collected by Wolley Dod at Smitwinkel Vley.

**M. pomeridianum**, Thunb., "Fl. Cap.," p. 427.

One specimen from a plant cultivated in Upsala Botanic Garden. It is *M. pomeridianum*, Linn. To the synonymy of this plant must be added *M. pugioniforme*, Houtt., "Nat. Hist.," Deel II, t. 53, separately issued as "Handleid. Plant. Kruidkunde," Vol. IX, p. 32, t. 53; *M. capense*, Houtt., ex Thunb. "Fl. Cap.," ed. Schultes, p. 411. (See note under *M. eriniflorum*.)

**M. pruinosum**, Thunb., "Fl. Cap.," p. 425.

This is represented by one very poor specimen, which is *M. echinatum*, Ait., "Hort. Kew.," ed. 1, Vol. II, p. 194 (1789); *M. pruinosum*, Thunb., in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII, Append., p. 17 (1791).

Stated to grow in the Karroo near Loeri River, in the Uitenhage Division, and in Cannaland. Sonder has retained *M. pruinosum* as a distinct species, but it is unquestionably identical with *M. echinatum*.

**M. pugioniforme**, Thunb., "Fl. Cap.," p. 424.

Two sheets containing scrappy specimens, which belong to *M. pugioniforme*, Linn. The locality given for it by Thunberg is near Verloren Valley and elsewhere. Sheet 2 contains a specimen from Upsala Botanic Garden.

**M. ringens**, Thunb., "Fl. Cap.," p. 423.

Three sheets marked  $\alpha$ ,  $\beta$ , and  $\gamma$ . Under this name Thunberg describes four varieties.

Sheet  $\alpha$  contains two species, the two upper specimens, which I have marked "1" on the sheet, evidently represent the plant described by Thunberg under var.  $\alpha$  as growing below the Roggeveld. They have leaves about 9 lines long, with 4-5 acute teeth (not bristles or cilia) on the margins and 2-3 on the keel. It appears to be *M. murinum*, Haw., "Obs.," p. 165 (1795).

The lower specimen and two detached leaves I think belong to *M. felinum*, Hill.

Sheet  $\beta$  contains two species, the upper left-hand specimen, marked "1," appears to be *M. murinum*, Haw., like the specimens on sheet  $\alpha$ . The other two specimens, marked "2," seem to belong to the plant from Hantam, described by Thunberg under var.  $\gamma$ , which is possibly *M. mustellinum*, Haw., "Suppl.," p. 87 (1819).

Sheet  $\gamma$  contains two specimens of a species that I cannot identify; it is probably new, but the material is inadequate for description.

**M. rostratum**, Linn., Thunb. "Fl. Cap.," p. 424, states that this grows in the Karroo between the Olifants River and the Bokkeveld. But the species is not represented in Thunberg's Herbarium.

**M. sabulosum**, Thunb., "Fl. Cap.," p. 422.

One sheet, containing two specimens of the plant described and a small plant accidentally mixed with them of *M. pomeridianum*, Linn. The original reference is—

**M. sabulosum**, Thunb., in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII, Append., p. 17 (1791).

Thunberg collected it in sandy places in Zwartland and near Saldhana Bay. His specimens are identical with Bolus No. 9004, from open places between Tulbagh Kloof and Pikiniers Kloof; with Stephens No. 7168, between Warmbaths and Modderfontein Farm; and with Stephens and Glover No. 8735, from Het Kruis, which have erroneously been distributed as being *M. pomeridianum*, Linn.

**M. scabrum**, Thunb., "Fl. Cap.," p. 420.

Three sheets, marked 1, 2, and 3, stated to grow on hills near Capetown.

Sheet 1 contains one very poor specimen of a species that is not determinable, but is not *M. scabrum*, Linn.

Sheets 2 and 3 both contain only specimens of *M. bracteatum*, Ait., "Hort. Kew.," ed. 1, Vol. II, p. 185 (1789).

**M. secundum**, Thunb., "Mus. Nat. Acad. Upsal. Auct.," Part II, p. 12 (1827), name only, no description.

This is not quoted in Thunb., "Fl. Cap." The specimen is identical with those of Burke No. 468 and is *M. articulatum*, Thunb. (which see).

**M. serratum**, Thunb., "Fl. Cap.," p. 427.

One sheet, containing one flowerless branch. It is possibly *M. tenuifolium*, Linn., but certainly not *M. serratum*, Linn. No locality is given for it.

**M. sessile**, Thunb., "Fl. Cap.," p. 419.

One specimen in fruit, collected in the Karroo between the Olifants River and the Bokkeveld Mountains. The original place of publication is—

**M. sessile**, Thunb., in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII, Append., p. 14 (1791).

Evidently a woody shrub or shrublet. The type consists of a straight terete main branch about  $1\frac{1}{4}$  line thick at the base, giving off numerous very short opposite leaf-bearing and flowering branchlets 2-5 lines long, including the flowers, and three spreading alternate branches  $1-1\frac{1}{2}$  inch long (but are broken at the ends and have been longer) and more than  $\frac{1}{2}$  line thick; internodes 2-4 lines long; bark brown. Leaves 1-2 closely placed pairs to each branchlet,  $1-1\frac{3}{4}$  line long and about as broad, probably larger when alive, half-globose, rounded at the apex, flat or slightly concave (from shrinkage?) above, very convex on the back, glabrous, smooth, apparently pellucid-dotted. Pedicel terminal and solitary on the short lateral branchlets, 1 line long, not bracteate (as Sonder wrongly states), gradually passing into the obconic calyx-tube, which is  $1\frac{1}{2}$  line long. Calyx 5-lobed; lobes  $1-1\frac{1}{2}$  line long, ovate, obtuse. Flowers red, *ex* Thunberg, but the specimen is in unripe fruit. Capsule 2-2 $\frac{1}{4}$  lines in diameter, with 5 acute ridges on the flattish top, purplish, *ex* Thunberg.

I have not been able to match this with any specimen at Kew.

Sonder has placed *M. cymbiforme*, Haw., "Obs.," p. 264, as a synonym of *M. sessile* Thunb., but that species is a totally different plant, with much larger leaves than those of *M. sessile*, Thunb.

**M. spathulatum**, Thunb., in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VII, Append., p. 5 (1791), not of Willdenow.

This species is omitted from all other books, including Thunberg's "Flora Capensis," and no specimen so named exists in his Herbarium. *M. spathulatum*, Willd., which seems to have hitherto been mistaken for Thunberg's plant by Willdenow, De Candolle, Sonder, and Berger (who wrongly quotes the name as "*M. spathulifolium*"), is an annual, and is the same as *M. criniflorum*, Linn. f., which grows near Capetown, whilst *M. spathulatum* of Thunberg is described as a perennial, from the Roggeveld region, and therefore not at all likely to be the same species. The following is a translation of Thunberg's description of *M. spathulatum*.

A stemless perennial. Root thick, fleshy, with fibres, divided above into several little stems. Leaves about 6, radical, approximate, erect, alternately opposite, about as long as a finger-nail ("unguicularia"), connate (at the base), ovate, obtuse, with a



point (apiculate), tapering and smoothish at the basal part, papillate-scabrid at the upper part, slightly concave above, convex on the back, entire, green, with a red margin, the two lower withered. Flower solitary, from the centre of the leaves, radical, pedunculate, white. Peduncle shorter than the leaves, 1-flowered. Calyx 5-lobed; lobes ovate-lanceolate.

It grows on the intermediate Roggeveld, and was out of flower in November.

Although no specimen in Thunberg's Herbarium is named *M. spathulatum*, I find in it an unnamed specimen that so exactly agrees with the original description of that species, that I think there can be no doubt whatever that it is the specimen of *M. spathulatum* from which he made his description, but that he omitted to write the name on the sheet, thus probably causing it to be omitted from his "Flora Capensis." This specimen is marked on the back of the sheet merely as having been collected at the Cape of Good Hope by Thunberg. The following is a description of the specimen:—

A stemless perennial. Root-stock fleshy, about 2 inches long and  $\frac{3}{4}$  inch thick at the upper part, where it divides into a few branches 3–4 lines long and 2–4 lines thick, each crowned with a small rosette of leaves; the lower part is abruptly contracted into a more slender portion giving off fibres. Leaves 4–6 in each rosette or growth, opposite, crowded, erect, or the outer spreading and withering; each leaf 4–7 lines long, 4–5 lines broad at the apical part, spathulate-obovate, very obtusely rounded at the apex, with a short apiculus, narrowed into a stout petiole-like part from about the middle to the base, where they are very shortly united, the upper part on both surfaces scabrid-papillate, from being covered with small, crowded, hard tubercles, which when highly magnified are seen to be themselves rough from being covered with very minute, hard, conical papillae; the lower or petiolar part is smoother; they appear to have been flat or perhaps slightly concave above, convex on the back. The specimen is flowerless, but there is a detached capsule, which evidently belongs to the plant, as the calyx-lobes are covered with the same peculiar tubercles, which on the lower part pass into crowded smooth dots, that are probably slightly prominent on the living plant. This capsule is 6 lines in diameter, hemispheric and 5-valved, with 5 calyx-lobes and a piece of a slender pedicel 1 line long, that is not dotted, attached to it. The calyx-lobes are 2–3 lines long, broadly ovate, apparently acute.

This very distinct plant is nearly allied to *M. calcareum*, Marloth, which also has the same peculiar type of tubercles upon its leaves, but they are longer, differently rounded at the apex, and are without the little apiculus present on those of *M. spathulatum*.

**M. spinosum**, Thunb., "Fl. Cap.," p. 420.

Three sheets, marked  $\alpha$ ,  $\beta$ , and  $\gamma$ , collected in the Karroo between Olifants River and the Bokkeveld Mountains, and at Hantam.

Sheet  $\alpha$  contains a specimen identical with "*M. spinosum*,  $\alpha$ ," of Herb. Drège, but it is not *M. spinosum*, Linn., and is undescribed. I therefore describe it as—

**M. aculeatum**, N.E.Br.

A shrub resembling *M. spinosum* in habit, with 3-forked spiny flowering branches. Branches straight, not intricately intermingled. Internodes 4–12 lines long, with grey or brown bark on the old parts, the younger parts, including the spines, which are 6–9 lines long and nearly or quite half a line thick at their base, marked with elongated immersed dots, glabrous. Leaves opposite, short and stout, shortly united at the base,  $1\frac{1}{2}$ – $2\frac{1}{2}$  lines long,  $1\frac{1}{2}$ –2 lines broad and 1 line thick on the dried specimens, flat above, slightly keeled beneath, obtuse or apiculate, spreading, each with a young shoot 2–3 lines long in its axil, bearing two pairs of crowded leaves, obscurely gland-dotted. Flowers solitary from the tufts of leaves on the widely spreading spines. Pedicels 1 line or less long. Calyx 5-lobed, about  $1\frac{1}{2}$  line in diameter across the short and very broadly obconic (or hemispheric?) tube (ovary); lobes subequal, about 1 line long, ovate, obtuse, three with broad

membranous margins. Corolla probably about 5 lines in diameter, with petals about 2 lines long. Stamens numerous, stigmas 5, erect, 1 line long, stout at the base, tapering to an awn-like point.

Drège's specimen was collected in the Nieuweveld, between Rhenoster Kop and Ganze Fontein, in the Beaufort West Division. The above description, however, is made entirely from Thunberg's specimen.

Sheet  $\beta$  contains two specimens of a very distinct spiny species that I cannot match with any specimen at Kew, but it is too imperfect to describe.

Sheet  $\gamma$  contains a specimen of a species allied to the true *M. spinosum*, Linn., but is apparently distinct. Masson also collected it; his specimens are at the British Museum. In Herbaria and books several species are included under the name *M. spinosum*.

**M. splendens**, Thunb., "Fl. Cap." p. 414.

One specimen from Upsala Botanic Garden of *M. splendens*, Linn.

**M. stipulaceum**, Thunb., "Fl. Cap." p. 422.

One sheet so named, containing a specimen from Upsala Botanic Garden, which is *M. falcatum*, Linn., and not at all like *M. stipulaceum*, Linn.

**M. subincanum**, Haw., in "Phil. Mag." Vol. LXIV. p. 427 (1824).

Two sheets thus named by Sonder, and apparently correctly. The specimens on one sheet match those of Zeyher No. 2604.

**M. tenuifolium**, Thunb., "Fl. Cap." p. 421.

Four sheets, marked 1, 2, 3, and 4 (but the 4 is written very like a 2). No indication of locality is given.

Sheet 1 contains two specimens of a new species allied to *M. gracile*, Haw., but is more slender, and is identical with Rogers No. 16826 (from near Clanwilliam), and Stephens No. 5170 (from Boontjes River).

Sheet 2 contains a specimen of *M. polyanthum*, Haw., "Synop." p. 270 (1812), of which *M. glomeratum*, Salm Dyck "Mesemb." § 48, fig. 1 (not of Linnaeus) is a synonym. It is quite distinct from the plant wrongly figured by Salm Dyck as being *M. polyanthum*, Salm Dyck's plant being *M. violaceum*, D. C.

Sheet 3 contains a specimen of *M. productum*, Haw.

Sheet 4 contains two species. The right-hand specimen is *M. productum*, Haw., in "Phil. Mag." Vol. LXIV. p. 425 (1824). The left-hand specimen may possibly be a weak branch of *M. tenuifolium*, Linn., but is not determinable with any certainty.

**M. testiculare**, Thunb., "Fl. Cap." p. 412.

One sheet, containing two specimens in fruit of *M. testiculare*, Ait., "Hort. Kew.," ed. 1, Vol. II, p. 181 (1789); Thunb. in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII, Append., p. 6 (1791).

Collected in the Karroo between Olifants River and the Bokkeveld Mountains.

**M. tetragonum**, Thunb., "Fl. Cap." p. 426.

One specimen collected at Hantam, the type of **M. tetragonum**, Thunb., "Prodr.," p. 91 (1800). Thunberg's specimen is the same as Zeyher No. 702 and Pearson Nos. 3066, 3391, and 3688, which have incorrectly been distributed under the name of *M. defoliatum*, Haw. That species, however, differs in habit, has less connate leaves and shorter pedicels. Possibly a plant collected by Pearson at Plaatklip, Namaqualand, and distributed under the same name without a number, may be the true *M. defoliatum*, Haw. (*M. claratum*, Jacq., not of Haw.).

Thunberg describes the stems of *M. tetragonum* as "subtetragonous," but his specimen has terete stems with a slight compression at the nodes, where alone they can be called subtetragonous, and they are in no way different from the stems of the specimens of Zeyher and Pearson.

Sonder in "Fl. Cap.," Vol. II, p. 432, erroneously quotes *M. fasciculatum*, Thunb., as a synonym of *M. tetragonum*, but the two species are totally different, as I have noted under *M. fasciculatum*, Thunb.

N.B.—As Moench, two years later, in his "Methodus Plantas, Supplementum," p. 191 (1802), also published a species under the name of *M. tetragonum*, which has been omitted by modern monographers, I would like to point out to future workers upon this genus, that it is probably a synonym of some species described by Haworth. The description of *M. tetragonum*, Moench, is as follows:—

Stem erect, shrubby, glabrous, smooth greyish; branches tetragonous. Leaves decussate, distinct (i.e. not united at the base), triquetrous, keeled, acute, not dotted, with the margins and keel reddish. Flowers solitary subsessile. Calyx 5-lobed; lobes ovate, three with membranous tips. Corolla reddish, with subulate petals.

**M. tortuosum**, Thunb., "Fl. Cap.," p. 427.

Two sheets marked *a* and *β*. Collected in the Karroo.

Sheet *a* contains two specimens of *M. tortuosum*, Linn., which agree with those of Pearson No. 3057 (from the valley of Kamsobap).

Sheet *β* contains four pieces of *M. expansum*, Linn.

**M. trichotomum**, Thunb., "Fl. Cap.," p. 419.

One specimen, collected between the Olifants River and the Bokkeveld Mountains, the type of *M. trichotomum*, Thunb., in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII, Append., p. 14 (1791).

This dwarf shrubby species continuously branches in a trichotomous manner from the base, with internodes 5–12 lines long, greyish, not dotted with white. The ultimate branches are only  $1\frac{1}{4}$ –2 inches long, not 2–3 inches as stated by Sonder. Leaves opposite, 2–5 lines long and apparently about 1 line broad and 1 line thick, flat above, slightly keeled at the apical part on the back (obsoletely trigonous, *ex* Thunberg), obtuse, firm, smooth (not papillate), green. Flowers terminal, solitary, sessile. Calyx 4-lobed; lobes unequal, the larger pair leaf-like up to 3 lines (or perhaps more) long, and twice as long as the shorter pair, which are ovate, obtuse, membranous, keeled on the back. Corolla with the outer petals spreading, dark purple, the inner short, whitish. Styles 4, very short, erect, purple; stigmas simple, spreading, yellow.

The above is Thunberg's description with particulars from the specimen included. The floral structure cannot be seen without damaging the specimen, as there are only two flowers upon it. I fail to match this species with any specimen at Kew, but Pearson No. 5549 is evidently allied to it, differing by its foliage, white-dotted branches, and pedicellate flowers.

**M. tripolium**, Thunb., "Fl. Cap.," p. 417.

One specimen from Upsala Botanic Garden, which is *M. lanceum*, Thunb., not *M. tripolium*, Linn. (See under *M. lanceum*.)

**M. truncatum**, Thunb., "Fl. Cap.," p. 412.

One sheet, containing two specimens, collected among rocks in the Kamanassie Karroo in all probability, as he states that it flowers in January and February, and he was in that region in January, 1774. But Thunberg also states that it grows in the Karroo below the Bokkeveld, and near Hex River. As he only collected in these localities in October and November, 1773 and 1774, the Kamanassie Karroo is the more probable locality for it, and I have no doubt he mistook other species of this group for *M. truncatum*, for many of them are very similar in appearance. This plant is—

**Conophytum truncatum**, N.E.Br., in the "Gardeners' Chronicle" (1922), Vol. LXXI, p. 261.

*Mesembryanthemum truncatum*, Thunb., in "Nov. Act. Acad. Leop.-Car. Ephem.," Vol. VIII, Append., p. 5 (1791).

Plant forming dense tufts, composed of closely packed branches  $\frac{1}{2}$ - $1\frac{1}{2}$  inch long and about 3 lines thick, including the numerous wrinkled, slightly shining, brown sheaths of a firm or somewhat parchment-like (not membranous) texture with which they are covered. Growths about 4 lines long and 3-4 lines in diameter across the top, which Thunberg describes as "retuse-truncate." The dried growths are glabrous, smooth, slightly shining, of a tan-brown colour, and conspicuously dotted. The specimens seem to have the remains of either some very damaged flowers or young fruits that are damaged and not in a fit state to examine, and also one perfect capsule  $2\frac{1}{2}$  lines in diameter, with 5 valves. Thunberg describes the calyx as 4-lobed, but in this specimen it was doubtless 5-lobed, although the lobes have disappeared. Yet it is not uncommon with species of this genus for flowers on the same plant to vary in the number of the calyx-lobes from 4-5.

This species seems never to have been found by any other collector, and has never been in cultivation.

**M. tuberosum**, Thunb., "Fl. Cap.," p. 421.

This species is now missing from Thunberg's Herbarium. But as, according to the description, it is quite a different plant from that to which Linnaeus had long before applied the same name. I propose for it the following change of name, and add a translation of Thunberg's description:—

**M. stratum**, N.E.Br.

*M. tuberosum*, Thunb., "Prodr.," p. 90 (1800), and "Fl. Cap.," p. 421, not of Linnaeus.

Stem prostrate, 9 inches or more long, filiform, terete, branching, glabrous, greyish. Branches opposite, somewhat secund, decumbent, about 3 inches long, papulose, green. Leaves opposite, united and sheathing at the base, about half as long as a finger-nail, terete-subulate, erect, papulose. Flowers terminating the branchlets, pedunculate, red. Peduncle thickened (upwards?), about as long as the leaves, 1-flowered, papulose. Calyx 5-lobed, papulose: lobes lanceolate, somewhat obtuse, erect. Petals linear, obtuse.

Grows on dry plains near Downes (Daunis), in the Calvinia Division.

Thunberg makes no mention of the plant having a tuberous root-stock or producing tubers, so that his name "*tuberosum*" seems inapplicable, unless he intended it to mean that because the plant was papillate on all green parts it was full of small swellings (from *tuber*, a swelling).

**M. umbellatum**, Thunb., "Fl. Cap.," p. 414.

There are six sheets bearing this name, marked *a*,  $\beta$ ,  $\gamma$ ,  $\delta$ ,  $\epsilon$ , and  $\zeta$ . Thunberg describes three plants as varieties under this name, but I am unable to fit his specimen to the descriptions with certainty.

Sheet *a* contains one specimen of a species I am not able to identify. It is identical with Bolus No. 9009 (from near Clanwilliam).

Sheet  $\beta$  contains three specimens: the right-hand specimen, which I have marked "B" on the sheet, is *M. parviflorum*, Jacq., "Hort. Schoenbr.," Vol. III, p. 15, t. 278 (1798). The other two specimens, marked "A," I do not match with any species at Kew.

Sheet  $\gamma$  contains two specimens of what is probably an undescribed species, which is the same as Pearson No. 5181 (from the southern slopes of Pikinier's Pass).

Sheets  $\delta$  and  $\epsilon$  contain specimens that I believe to belong to *M. tuberosum*, Linn.

Sheet  $\zeta$  contains two specimens of a new species allied to *M. arboriforme*, Burch., but has shorter and stouter leaves, and the branches of the cyme diverge at a smaller angle, but it is scarcely in good enough condition to describe from.

Neither of the specimens belong to *M. umbellatum*, Linn., and I am unable to say to which of the localities he gives the various specimens belong. He states that they grew in the Karroo between Olifants River and the Bokkeveld Berg, and in the Karroo beyond Hartequas Kloof.

**M. uncinatum**, Thunb., "Fl. Cap.," p. 420.

One sheet, containing four specimens, three of which belong to *M. uncinatum*, Linn., "Sp. Pl.," ed. 1, p. 483 (1753); *M. uncinellum*, Haw., "Rev.," p. 125 (1821).

These specimens are identical with Rehmann No. 2844 (from Verkeerde Vley, in the Ceres Division).

The fourth specimen is a scrap of *M. villosum*, L. (*M. Ecklonis*, Salm Dyck, "Mesemb.," § 49, fig. 5), evidently accidentally mixed with the other specimens.

Thunberg collected *M. uncinatum* on the Karroo between the Olifants River and the Bokkeveld Mountains.

**M. verruculatum**, Thunb., "Fl. Cap.," p. 435.

One sheet, containing three specimens, all belonging to different species, neither of which is *M. verruculatum*, Linn.

Thunberg gives two descriptions, and states that one (description *a*) grows in the Karroo between the Olifants River and the Bokkeveld, and the other (description *β*) at Hantam.

The lower specimen on the sheet, which seems to fit description "*a*," has been marked "*β*" by Sonder, and quoted by him as being *M. veruculoides*, Sond. But it is not the plant described by him under that name, his description having been made from a plant collected by Zeyher. Thunberg's specimen is not determinable.

The middle specimen on the sheet is *M. glaucum*, Linn.

The upper specimen is different from either of the others, and consists of a piece of a stout, prostrate, leafy, purple stem without flowers. It is identical with Wolley Dod's specimens Nos. 2420 and 3663 (from Lion's Head, near Capetown), which I have not identified.

Besides these enumerated above, Thunberg's Herbarium contains four sheets that are unnamed by Thunberg, one of them being named by Sonder. The following is my identification of these:—

**M. caninum**, Lam., "Encycl.," Vol. II, p. 487 (1786).

One sheet, labelled on the back as from Upsala Botanic Garden.

**M. noctiflorum**, Linn.

One specimen, labelled "*Caroo infra Bockland.*"

A specimen that is without information on the sheet, may possibly be *M. spectabile*, Haw., "Obs.," p. 385 (1795).

**M. villosum**, Linn., "Sp. Pl.," ed. 1, p. 483 (1753).

*M. Ecklonis*, Salm Dyck, "Mesemb.," § 49, fig. 5 (after 1836).

One specimen, stated on the back of the sheet to have been collected at the Cape of Good Hope.

It is correctly named *M. Ecklonis* by Sonder, which so exactly agrees with the original description of *M. villosum* under the name of "*Mesembryanthemum caule foliisque pubescentibus*" in Linnaeus, "Hortus Cliffortianus," p. 216, as quoted in his "Species Plantarum," that I have no doubt whatever of its identity with that plant, although there is no specimen of *M. villosum* in the Linnean Herbarium.

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„ <i>microphyllum</i> , Bartl.....	155	Thunb.....	152, 157, 159
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